On the Polynomial Degree of Minterm-Cyclic Functions

Edward L. Talmage

Advisor: Amit Chakrabarti

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ABSTRACT

When evaluating Boolean functions, each bit of input that must be checked is costly, so we want to know how many bits must be checked for a given function. To aid in this analysis, a variety of complexity measures exist, providing easier methods of analysis to find lower bounds on the function's cost. An important complexity measure is "polynomial degree", defined as the degree of the (unique) multilinear polynomial that represents the Boolean function.

We look at the polynomial degrees of minterm-cyclic functions, which are a type of pattern-matching problem. We prove, for monotone functions, that when the input length is a prime power or when the pattern is a number of consecutive ones, this degree is maximal, showing that every bit of the input must be evaluated, which means that these are costly functions.

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Chapter 1

Introduction

A Boolean function is a function that operates on truth values—represented as 0's (false) and 1's (true)—returning either a true or false value. Everything a computer does is, at some level, composed of Boolean functions. The input of every computation is a string of 0's and 1's, and every output is similarly represented by a collection of 1's and 0's. Thus the output of any computation is a concatenation of a sequence of Boolean functions. In analyzing the performance of Boolean functions, then, we are working to understand computation at the most basic level.

We will first give some notation that will be used throughout this paper. We will refer to a Boolean function f as $f : \{0,1\}^n \rightarrow \{0,1\}$ where in $f(x)$, x_i denotes the ith bit of the input (i.e. $x = x_1 x_2 x_3 ... x_n$).

A *pattern of size* k is a string in $\{0,1,\star\}^k$. We will say that a string x of size n *matches* a pattern $\mathscr{P}$ of size n if $\forall i \in \{1,...,n)$ s.t. $\mathscr{P}_i \in \{0,1\}, x_i = \mathscr{P}_i$

The *support* of a binary string or pattern x is the set $S = \{i \mid x_i \in \{0,1\}\}$. The *weight* of a binary string or pattern is $weight(x) = |\{x_i \mid 1 \leq i \leq n, x_i = 1\}|$.

The $size$ of a string or pattern is its number of bits. We will use x^i to denote the binary string obtained from x by flipping the ith bit. If $S \subset \{1,...,n\}$, x^S is the string obtained from x by flipping each bit i where $i \in S$.

We will use $[n]$ to denote the set $\{1,2,...,n\}$.

Examples of Boolean functions range from very simple, such as the AND or OR of a binary string, which are defined as follows:

$$\textsc{and}(\{0,1\}^n) = 1 \Leftrightarrow x_1 = x_2 = ... = x_n = 1$$
$$\textsc{or}(\{0,1\}^n) = 1 \Leftrightarrow \exists i \in \{1,...,n\} \text{ s.t. } x_i = 1$$

to the quite complex, such as the addressing function ADDRESS : $\{0,1\}^{n+2^n} \to \{0,1\}$ which is one if and only if, when the first n bits are interpreted as a binary integer k, the kth location in the last 2^n bits is one. That is,

$$\text{ADDRESS}(x) = 1 \Leftrightarrow x_{n+k} = 1.$$

Because it is not always straightforward to prove general bounds on the complexity of a Boolean function, researchers have developed a number of complexity measures that are sometimes easier to bound. If we can also bound the relations between these measures, we then have a much more versatile toolbox for bounding the complexity of Boolean functions.

1.1 Decision Tree Complexity

A decision tree is a mechanism for processing Boolean strings. Specifically, it is a deterministic finite automaton which forms a binary tree. The Boolean input string is read left to right and the value of each bit decides whether execution descends to the left or right child of the current node. Leaves of the decision tree are labeled with the output value of the function, either 1 or 0. A decision tree *corresponds* to a Boolean function if for every input string x the label on the leaf reached in the tree by execution on x is the value returned by the function on input x.

Definition 1.1. The *Decision Tree Complexity*, of a Boolean function f, denoted $D(f)$, is the minimum height of a binary decision tree which corresponds to f.

Determining which child to descend to in a decision tree is a single operation in Boolean logic, so the depth of traversal in a decision tree is directly related to the number of instructions a computer will have to execute to evaluate the function on that input. Thus the decision tree complexity is the worst case number of operations for the corresponding Boolean function. Any bound we can prove on the decision tree complexity of a function directly gives us a result about the time complexity of the function. We note that the maximum possible decision tree complexity of any function is n, since one bit of the input string is evaluated at each level and no bit is evaluated more than once.

1.2 Sensitivity

Definition 1.2. The *sensitivity at x* of a function, denoted $s_x(f)$, is the number of bits in x which, when flipped, give $f(x^i) \neq f(x)$.

Definition 1.3. The *sensitivity* of a function, denoted $s(f)$, is the maximum over all inputs x of the sensitivity of f at x. That is, $s(f) = \max_{x \in \{0,1\}^n} s_x(f)$.

Sensitivity measures how easy it is to change the value of f by altering the input slightly. If a function has low sensitivity, then it is relatively easy to compute, because many of the bits in the input have no significant effect on the output, allowing for a shorter decision tree because fewer bits need to be checked. Conversely, a high sensitivity means that more bits will have to be checked in computing the function, so the decision tree will be deeper, and the function harder to compute.

1.3 Block Sensitivity

Block sensitivity is exactly analogous to sensitivity. Instead of flipping single bits, though, we consider sets, or blocks, of bits that are flipped together.

Definition 1.4. The *block sensitivity at x* of a function, denoted $bs_x(f)$, is the maximum number of disjoint subsets $B \subset \{1, ..., n\}$ such that $f(x^B) \neq f(x)$.

Definition 1.5. The *block sensitivity* of a function, $bs(f)$ is the maximum block sensitivity of f at any $x \in \{1, ..., n\}$. That is, $bs(f) = \max_{x \in \{0,1\}^n} bs_x(f)$.

Sensitivity is a special case of block sensitivity, where blocks are restricted to size 1, so the block sensitivity of a function is always greater than or equal to the sensitivity. The exact relation between sensitivity and block sensitivity has been the subject of much research. The largest known gap, shown by Rubinstein, is quadratic, and is conjectured to be the largest possible.

Open Problem 1. *For all Boolean functions f, $bs(f) = O(s(f)^2)$.*

1.4 Polynomial Degree

The polynomial degree of a Boolean function is useful because it allows us to use algebraic tools to prove complexity results by converting a problem to one in terms of polynomials. Before defining the representing polynomial of a Boolean function, we will introduce the family of polynomials that appear in this study.

Definition 1.6. A *multilinear polynomial* is a polynomial in variables $x_1, x_2, ..., x_n$ such that each term has the form $c \cdot \prod_{i \in S \subset \{1,...,n\}} x_i$ where c is a constant.

Theorem 1.1. *If p, q are multilinear polynomials of degree d with $p(x) = q(x)$ for all $x \in \{0,1\}^n$, then $p(x) = q(x)$.*

Proof. Let $r(x) = p(x) - q(x) \forall x$. Assume r is not the zero function. Then there is some minimal degree term in r with non-zero coefficient. Let V be the set of x_i which appear in that term. Define y such that $y_j = 1$ iff $j \in V$. Then, because r has degree less than or equal to d, we have $p(y) = q(y)$. However, every monomial in r except for $\prod_{v \in V} v$ will be zero, so $r(y) = c \neq 0 \neq p(y) - q(y)$, which contradicts the assumption that r is not the zero function. Thus, r must be the zero function, so p and q are the same function. $\square$

Definition 1.7. The *representing polynomial* $p_f : \{x_1, ..., x_n\} \to \{0,1\}$ of a Boolean function is a polynomial in terms of the bits $x_1, ..., x_n$ of the function's input that has the same value as the function. We note that if each variable x_i is an element of $\{0,1\}$, we have $x_i^a = x_i$ for all a. Thus, every representing polynomial will be multilinear.

Definition 1.8. The *polynomial degree* of a boolean function is the degree of the function's representing polynomial.

One of the simplest non-trivial representing polynomials is that of the AND function. For AND to return true, every bit of the input must be true, so if we take $p_{\text{AND}}(x) = (x_1)(x_2)...(x_n)$, then p_{AND} is 0 if any $x_i, 1 \leq i \leq n$ is 0, and 1 if every x_i is 1, so $p_{\text{AND}}(x) = 1 \iff \text{AND}(x) = 1$. This polynomial is unique, by the theorem we proved above.

When constructing representing polynomials of a Boolean function f, it is often useful to consider the DeMorgan's-laws equivalent function. For example, consider the OR function on n bits. By DeMorgan's laws, $\text{OR}(x_1, x_2, ..., x_n) = \text{NOT}(\text{AND}(\text{NOT}(x_1)\text{NOT}(x_2)...\text{NOT}(x_n)))$ To represent this as a polynomial, we note that $\text{NOT}(x_1) = 1 - x_1$, since this is 1 when x_1 is 0 and 0 when x_1 is 1, and recall that $\textsc{and}(x_1, x_2, ..., x_n) = \prod_{i=1}^{n} x_i$. Thus, computing the polynomial,

$$\begin{aligned}
\textsc{or}(x_1, x_2, ..., x_n) &= \textsc{not}(\textsc{and}(\textsc{not}(x_1), \textsc{not}(x_2), ..., \textsc{not}(x_n))) \\
&= \textsc{not}(\textsc{and}((1 - x_1), (1 - x_2), ..., (1 - x_n))) \\
&= \textsc{not}((1 - x_1)(1 - x_2)...(1 - x_n)) \\
&= 1 - (1 - x_1)(1 - x_2)...(1 - x_n).
\end{aligned}$$

To check, observe that the product of the $(1 - x_i)$'s is 0 if any x_i is 1, and thus 1 only if every $x_i = 0$. Thus the polynomial evaluates to 1 when any of the input bits is 1 and to 0 when the input is 0, so this polynomial represents the OR of n bits.

Chapter 2

Minterm-Transitive and Minterm-Cyclic Functions

One particularly prevalent family of functions are those that have to do with matching an input string against a given pattern. The strictest of these functions checks for equality with pattern $\mathscr{P}$:

$$\textsc{equal}_{\mathscr{P}} : \{0,1\}^n \to \{0,1\} = 1 \Leftrightarrow x = \mathscr{P}.$$

$\textsc{equal}$ has $D(\textsc{equal}) = s(\textsc{equal}) = bs(\textsc{equal}) = \deg(\textsc{equal}) = n$, since every bit in the input must be checked and must be exactly correct, so any change from the pattern will render the function false.

Other families of pattern matching functions that are of more interest will return true on larger sets of inputs. To do this, successive additional types of freedom are allowed. First, we will allow any string that starts with the desired pattern, but may be longer. This is the prefix function,

$$\textsc{prefix} : \{0,1\}^n \to \{0,1\} = 1 \Leftrightarrow \textsc{equal}_{\mathscr{P}}(x_1 x_2 ... x_k) = 1$$

where $size(\mathscr{P}) = k$.

Next, we will allow matches anywhere in the input string that can be moved to the beginning under a certain group of permutations. To do this, we will define minterm-transitive functions.

Definition 2.1. A *transitive group of permutations G* on $[n]$ is a set of bijections $\pi : [n] \to [n]$ such that for any $x, y \in [n]$ there is a $\pi \in G$ such that $\pi(x) = y$. That is, any element can be mapped to any other by some permutation in the group.

Definition 2.2. A *minterm-transitive* function $f_{\mathscr{P},G} : \{0,1\}^n \to \{0,1\}$ under a transitive group of permutations G equals 1 if and only if there is a $\pi \in G$ such that $\text{PREFIX}_{\mathscr{P}}(\pi(x)) = 1$, where $\mathscr{P}$ is a pattern of size k, called a *minterm*.

In this paper, we are interested in a subclass of minterm-transitive functions, those associated with the group of cyclic shifts. We call these functions *minterm-cyclic*.

Definition 2.3. The cyclic shift cs_k is the permutation that cyclically shifts a binary string by k bits. That is, $cs_k : \{0,1\}^n \to \{0,1\}^n$,

$$cs_k(x_1x_2...x_n) = x_{(1+k \bmod n)}x_{(2+k \bmod n)}...x_{(n+k \bmod n)}.$$

Definition 2.4. A *minterm-cyclic* function is a minterm-transitive function $f_{\mathscr{P},G}$ where G is the cyclic group of shifts generated by cs_1.

S. Chakraborty [2] proved that all minterm-transitive functions have sensitivity $s(f) = \Omega(n^{1/3})$. Thus, since block sensitivity is less than or equal to n, for minterm-transitive functions we know that $bs(f) = O(s(f)^3)$. Chakraborty gave an example of a minterm-cyclic (and therefore minterm-transitive) function for which this bound is tight.

More recently, Drucker [3] used a probabilistic approach to prove that general, non-constant minterm transitive functions have block sensitivity $bs(f) = \Omega(n^{3/7})$ and gave an example for which $bs(f) = O(n^{3/7} ln^{1/7} n)$, so the bound is nearly tight.

In this paper, we are primarily concerned with minterm-cyclic functions whose patterns consist only of 1's and $\star$'s. These functions have simpler representing polynomials, and are thus easier to bound. In fact, minterm-cyclic functions with this type of pattern are monotone functions. That is, on no input at which f takes the value 1 will increasing the weight of the input (flipping 0's to 1's), cause f to take the value 0.

Lemma 2.1. *A minterm-cyclic function $f_{\mathscr{P}}$ is monotone if and only if $\mathscr{P} \in \{1,\star\}^k$.*

Proof. First, assume that $\mathscr{P} \in \{1,\star\}^k$. Let $x \in \{0,1\}^n$ such that $f_{\mathscr{P}}(x) = 1$. Then for some $i, 1 \leq i \leq n$, $x_i...x_{i+k}$ matches $\mathscr{P}$. That is, for all j with $\mathscr{P}_j = 1, x_{i+j} = 1$. If, for some a, $x_a = 0$, we still have $x^a_{i+j} = 1$ for every j with $\mathscr{P}_j = 1$, so x^a matches $\mathscr{P}$. Thus $f_{\mathscr{P}}$ is monotone.

Next, assume $f_{\mathscr{P}}$ is monotone. Assume there is some f such that $\mathscr{P}_j = 0$. let $F = \{j \mid \mathscr{P}_j = 0\}$. Let x be such that for every $j \in J, x_j = 0$ and $\forall i \notin J, x_i =$

1. Then $f_{\mathscr{P}}(x) = 1$, because the beginning of x matches $\mathscr{P}$, but for an arbitrary $j \in J, f_{\mathscr{P}}(x^j) = 0$, because there are fewer 0's in x^j than in $\mathscr{P}$, so there cannot be a shift of x that matches $\mathscr{P}$. Therefore $J = \emptyset$, so $\mathscr{P} \in \{1, \star\}^k$. $\square$

Chapter 3

Lower Bound on Polynomial Degree for Minterm-Cyclic Functions with Minterm 1^k

Many classes of functions will have polynomial degree n, since every bit may affect the value of the function. This is not true in general, (Consider for example the function $\textsc{bit}_i(x) = 1 \iff x_i = 1$: $p_{\textsc{bit}_i}(x) = x_i$, regardless of the size of the input.), but it is true for large families of very important functions. We will here prove that this is true for minterm-cyclic functions with a pattern that is a string of consecutive 1's.

3.1 Main Result and Proof Outline

Theorem 3.1. *Let $m = 1^k = 11...1$ be a string of k 1's. Let f_m be the minterm-cyclic function with minterm m. Then* $\deg(f_m) = n$. *Specifically, the coefficient of a degree-n term in p_{f_m} is* $\begin{cases} -k & n \equiv 0 \pmod{k+1} \\ 1 & \textit{otherwise} \end{cases}$

To prove this theorem, we will first construct its representing polynomial. To do this, consider that a minterm transitive function is effectively the OR of a number of PREFIX functions, since we are happy when any one of the shifts in G gives a match between the input x and the pattern. This understanding allows us to use DeMorgan's laws to express the function as a NOT of AND's of NOT's.

We will then have a product of degree-k terms, so to find the coefficient of the degree-n term, we effectively want to choose a subset of these terms such that their product includes each x_i. The total coefficient of the degree-n term will then be the weighted sum of the ways to do this, where the weights are the products of the coefficients of the degree-k terms.

Because of the way we have limited the family of functions we are considering, each degree-k term will have k consecutive x_i's, considered modulo n. We need to cover $\{1...n\}$ with some set of these. This gives rise to a family of simply-stated combinatorial problems: Given a circular table with n labeled seats, how many ways are there to seat r indistinguishable people around the table such that there are no gaps of size k or larger between people. For reasons that will be apparent later, we want to take an alternating sum of these numbers over r.

To do this, we consider the set of acceptable seatings as a language given by a regular expression. This expression will restrict the number of empty seats following each full seat. If we then weight full and empty seats correctly, we can construct a generating function in terms of z that will be have coefficients of z^n given by the alternating sign sums of the number of strings in the language of size n, which are exactly the coefficients of the degree-n terms of the representing polynomial of f_m for each n.

This generating function will be ordinary and rational, so we know that it will satisfy a simple linear recurrence. By considering the base cases explicitly in the generating function we constructed, we can show that the recurrence is true, and that the coefficients in the generating function are periodic, which gives us the precise description of the degree-n coefficients. It then follows directly that since the degree-n term always has a non-zero coefficient, then the degree of the representing polynomial, or $\deg(f_m)$, is n.

3.2 Proof of Theorem 3.1

3.2.1 Setup

Let $p = p_{f_m}$ be the representing polynomial of f_m. We can construct p directly by observing that $p(x) = 1$ exactly when some set of k consecutive bits in x are all 1's. There are n possible sets of k consecutive bits, since we consider x

cyclically, as any bit of the input can be the first of our consecutive 1's. Thus,

$$\begin{aligned} p(x) &= 1 - \prod_{i=1}^{n} \left(1 - \prod_{j=0}^{k-1} x_{(i+j \bmod n)} \right) \\ &= 1 - (1 - x_1 x_2 ... x_k)(1 - x_2 x_3 ... x_{k+1}) ... (1 - x_n x_1 x_2 ... x_{k-1}). \end{aligned}$$

because if any k consecutive bits are 1, then one of the terms in the outer product will be zero, making the output 1. On the other hand, if no k consecutive bits are 1, each inner product will be 0, so every term of the outer product will be 1, giving $p(x) = 0$.

Because $(x_i)^a = x_i$ for all positive integers a, a degree-n term of $p(x)$ is a term of the form $c\prod_{i=1}^{n} x_i = cx_1x_2...x_n$. Define $C(n,k)$ as the coefficient of a degree-n term of $p = p_{f_{1^k}}$. Then p has degree n if and only if $C(n,k) \neq 0$, so we will proceed by evaluating $C(n,k)$.

Introduce variables $y_1, y_2, ..., y_n$ corresponding to the products of x_i's in the explicit representation of $p(x)$ above. That is, $y_i = \prod_{j=0}^{k-1} x_{(i+j \bmod n)} = x_i x_{i+1} ... x_{i+k-1}$, with subscripts taken modulo n. Thus, $p(x) = 1 - \prod_{i=1}^{n}(1 - y_i)$.

To generate a degree-n term in the expansion of the polynomial p, we need to choose $\{l_1, ..., l_r\} \subset [n]$ such that $l_{j+1} - l_j \leq k$, because each y_{l_j} represents k consecutive x_i's. Thus, if we choose l_j's in this way there will not be a gap of k or more between any two consecutive y_{l_j}'s and we will have at least one of each x_i, $i \in [n]$, in the product of the y_{l_j}'s.

For example, if $k = 3, n = 5$, we could choose $\{y_1, y_2, y_4\}$. y_1 gives us $-x_1x_2x_3$, y_2 gives $-x_2x_3x_4$, and y_4 gives us $-x_4x_5x_1$. The product of these y's will be $(-1)^3 x_1^2 x_2^2 x_3^2 x_4^2 x_5 = -x_1x_2x_3x_4x_5$. If, on the other hand, we chose only y_1 and y_2, we would have the term $x_1 x_2^2 x_e^2 x_4$, which does not have degree n.

Because each y_{l_j} has coefficient -1, $C(n,k)$ will be a general weighted sum over r of the number of ways to choose the l_j's from $[n]$ which specify the r y_{l_j}'s that form a degree-n term. The weighting will be $(-1)^r$ since each of the r y_{l_j}'s is negative, times -1, because of the initial negation. We will reapply this final negation when we construct the generating function for the number of seatings.

For each $r, 1 \leq r \leq n$, this can be expressed as a combinatorial seating problem: How many ways are there to seat r indistinguishable people (the y_{l_j}'s) at a circular table with n labeled seats $(x_1, ..., x_n)$ so that there are no gaps of size k or more between people (Each y_{l_j} covers k adjacent seats, so we don't need another $y_{l_{j'}}$ until y_{l_j+k}). Call this seating function $S(n,k,r)$. Then, as we said above, since in p every term with x_i's is negative, and is further negated by the initial subtraction from 1, we have

$$C(n,k) = \sum_{r=1}^{n} (-1)^{r+1} S(n,k,r).$$

Lemma 3.2. $C(n,k) = \begin{cases} -k & n \equiv 0 \pmod{k+1} \\ 1 & otherwise \end{cases}$

For illustration, we will first treat the case where $k = 2$, then give a proof for the general case.

3.2.2 A Special Case

The set of seatings of r people around a table with n seats such that no 2 adjacent seats are empty can be expressed as a language of binary strings, where 1's represent full seats and 0's represent empty seats. A regular expression for the language $\mathscr{L}_2$ consisting of all such strings, in terms of r, the number of full seats, is

$$\mathscr{L}_2 = \bigcup_{r=1}^{\infty} \left[(\{1\} \times \{\epsilon, 0\})^r \cup \{0\} \times (\{1\} \times \{\epsilon, 0\})^{r-1} \times \{1\} \right]$$

since we can have either a 0 or a 1 in the first seat, but if the first seat is empty, the 2nd and last seats must be full to avoid a gap of size 2 and every full seat can be followed by 0 up to $k - 1 = 1$ empty seats.

To show that this language accurately represents all possible seating problems, we show a bijection between seatings and string in $\mathscr{L}$. Given a seating, walk around the table from place 1, adding a 1 to the string when you pass a full seat and a zero when you pass an empty seat. The resulting string will be in $\mathscr{L}$ since you have a series of full seats followed by 0 to $k - 1$ empty seats, with the exception of the beginning and end, where the number of initial empty seats plus the number of final empty seats is less than k, giving a 1 followed by 0 to $k - 1$ 1's, etc. To go back from strings to seatings, pop off elements of the string one at a time. When a 1 is popped from the ith place, put a person in seat i and when a 0 is popped, leave seat i empty.

Note that the language $\mathscr{L}_2$ is not limited to strings of a particular size. Instead of being a function of the number of seats around the table, it is organized as a function of the number of people sitting at the table. We can see that both 1011 and 01011101101 are in the language specified above, representing possible seatings of 3 and 7 people in 4 and 11 seats, respectively.

Thus, we need to take a general count of the strings in this language weighted by the number of seats represented by a string. Ordinary counting is a special case of counting where every string has weight 1. A weighted count doesn't necessarily add 1 to the total for each item counted, but adds a value dependent on the string, called its weight.

We will solve this problem using the method of Ordinary Generating Functions. We weight a 0 as z and a 1 as zt, then use a standard translation to turn operations on regular expressions into polynomial arithmetic ($\times$ becomes $\cdot, \cup$ becomes $+$). We choose this weighting because in each string, the exponent of z will represent how many seats there are, since every seat's term contains an z and the additional factor of t on full seats allows us to distinguish cases by the number of full seats. Thus we obtain the generating function $G(z,t,k)$ for the number of seatings, multiplying by -1 as noted above.

$$G(z,t,2) = -\sum_{r=1}^{\infty}\left[((zt)(1+z))^r + z((zt)(1+z))^{r-1}(zt)\right]$$

This sum splits into two geometric series, so we can give a closed form equation,

$$G(z,t,2) = \frac{-1}{1-zt(1+z)} - \frac{z^2t}{1-zt(1+z)}$$

If we let $t=-1$ because each y_{l_j} has coefficient -1, then we have $G(z,t,2) = \frac{-1}{1+z+z^2} - \frac{-z^2}{1+z+z^2} = \frac{-1+z^2}{1+z+z^2}$. As a generating function, $G(z,t,k)$ has the property that the coefficient of z^n is $C(n,k)$. From the study of combinatorics[6], we know that the coefficients of this generating function will satisfy the recurrence $C(n,k) = -\sum_{i=1}^{k} C(n-i,k)$, for $n>0$. So in this case, $C(n,2) = -C(n-1,2) - C(n-2,2)$.

A linear recurrence like this with two terms will have two base cases. Here, if $n=k=2$, then we see that the only binary input that will match a cyclic shift of the pattern 11 is $1^n = 1^k = 1^2 = 11$, so we have the AND function on 2 bits, which has representing polynomial $p_{\text{AND}} = x_1x_2$, so the coefficient of the degree-2 term is 1. If $n=k+1=3$, then we have $p_{f_{11}} = 1-(1-x_1x_2)(1-$

$x_2x_3)(1-x_3x_1) = 1-(1-x_1x_2-x_2x_3-x_1x_3+x_1x_2^2x_3+x_1^2x_2x_3+x_1x_2x_3^2-x_1^2x_2^2x_3^2) = x_1x_2+x_2x_3+x_1x_3-2x_1x_2x_3$, so the coefficient of the degree-3 term is -2.

We can then establish the pattern of the degree-n coefficients for all n using the recurrence. $C(4,2) = -(-2+1) = 1$, $C(5,2) = -(1-2) = 1$, $C(6,2) = -(1+1) = -2$, and then the pattern repeats, so $C(n,2) = -2$ for $n \equiv 0 \pmod{2+1}$ and 1 otherwise.

3.2.3 General Case

For the general case, we proceed exactly as before, where $C(n,k)$ will be an alternating sum, over r, of seatings of r indistinguishable people around a table with n labeled seats such that there are no gaps of size k, since each y_{l_j} will be composed of k consecutive x_i's. Our language will then be the union of k cases, depending on where the first full seat is.

$$\begin{aligned}
\mathscr{L}_k &= \bigcup_{r=1}^{\infty}\big[(\{1\}\times\{\epsilon,0,\dots,0^{k-1}\})^r \\
&\qquad \cup\{0\}\times(\{1\}\times\{\epsilon,0,\dots,0^{k-1})^{r-1}\times\{1\}\times\{\epsilon,0,\dots,0^{k-2}\} \\
&\qquad \cup\dots\cup\{0^{k-1}\}\times(\{1\}\times\{\epsilon,0,\dots,0^{k-1}\})^{r-1}\times\{1\}\big] \\
&= \bigcup_{r=1}^{\infty}\big[(\{1\}\times\{\epsilon,0,\dots,0^{k-1}\})^r\cup \\
&\qquad \left(\cup_{i=1}^{k-1}\{0^i\}\times(\{1\}\times\{\epsilon,0,\dots,0^{k-1}\})^{r-1}\times\{1\}\times\{\epsilon,0,\dots,0^{k-1-i}\}\right)\big]
\end{aligned}$$

We can again transform this into a sum of generating functions, weighting

0's as z and 1's as zt, multiplying by the extra factor of -1:

$$\begin{aligned}G(z,t,k) = &-\sum_{r=1}^{\infty}\Big[((zt)(1+z+\ldots+z^{k-1}))^r - \\ &\sum_{i=1}^{k-1}(z^i)(zt(1+z+\ldots+z^{k-1}))^{r-1}(zt)(1+z+\ldots+z^{k-1-i})\Big] \\ &= \frac{-1}{1-zt(1+z+\ldots+z^{k-1})} - \sum_{i=1}^{k-1}\frac{z^i(zt)(1+z+\ldots+z^{k-1-i})}{1-zt(1+z+\ldots+z^{k-1})}\end{aligned}$$

And if we set $t=-1$,

$$\begin{aligned} &= \frac{-1}{1+z+\ldots+z^k} + \sum_{i=1}^{k-1}\frac{z^{i+1}+z^{i+2}+\ldots+z^k}{1+z+\ldots+z^k} \\ G(z,k) &= \frac{-1+z^2+2z^3+\ldots+(k-1)z^k}{1+z+z^2+\ldots+z^k}\end{aligned}$$

It is a general combinatorial result[6] that a function whose values are the coefficients of a generating function of this type will satisfy the recurrence $C(n,k) = -\sum_{i=1}^{k} C(n-i,k)$, for $n > 0$. We thus need only to calculate the k base cases. These base cases are the coefficients of $z^1, z^2, \ldots, z^k$ in $G(z,k)$, which we can determine explicitly. For $1 \le s \le k$, if we have s seats, then if there are any full seats, we will not have a gap of k consecutive empty seats, so the number of satisfactory seatings is $\binom{s}{r}$, where r is the number of full seats. Recall that $C(n,k)$ is defined as the alternating sum over r from 1 to n of the number of seatings. We thus have $C(s,k) = \sum_{r=1}^{s}(-1)^{r+1}\binom{s}{r}$.

In general, the alternating sum of a row of Pascal's triangle is 0, or $P = \sum_{r=0}^{s}(-1)^{r+1}\binom{s}{r} = 0$. $C(s,k) = P - (-1)^{0+1}\binom{s}{0} = 0-(-1) = 1$ for each z^s. Thus $C(s,k) = 1$ for $1 \le s \le k, k > 0$.

If we plug the base cases into our recurrence, we have $C(k+1,k) = -((k)(1)) = -k$. Then for $k+2 \le n \le 2k+1$, we will have $C(n,k) = -(-k+(k-1)(1)) = 1$. At this point, the function repeats with period $k+1$. Therefore $C(n,k) = -k$ when $n \equiv 0 \pmod{k+1}$ and $C(n,k) = 1$ otherwise. □

To end this chapter, we will give an example to show that this bound does not apply to all minterm-cyclic functions. In fact, it doesn't even apply to all monotone minterm-cyclic functions.

Theorem 3.3. *There is a monotone minterm-cyclic function* $f_{\mathscr{P}} : \{0,1\}^n \rightarrow \{0,1\}$

with $\deg(f_{\mathscr{P}}) < n$

Proof. We prove by example. Let $\mathscr{P} = 11{\star}1$ and $n = 12$. Then the coefficient of the degree-n term of $p_{f_{\mathscr{P}}}$ is 0, as seen at $(\{0,1,3\},12)$ in the table in the Appendix, so $\deg(f_{\mathscr{P}}) < n$. $\square$

Chapter 4

Polynomial Degree of Minterm-Cyclic Functions on Inputs of Particular Length

When we calculated the degree-n coefficients for a large set of cases, it became apparent that they follow a number of interesting patterns. One pattern in particular was based on the columns of data for different minterms at a fixed n, when n was prime. In fact, for every prime power $n = p^s$ where p is prime and s is a positive integer, and every minterm m, the degree-n coefficient of the representing polynomial of the minterm-cyclic function f_m was congruent to 1 (mod p). We will prove that this pattern holds in general.

Theorem 4.1. *For p a prime and s a positive integer, if $n = p^s$, then the coefficient of the degree-n term in the representing polynomial of any monotone minterm-cyclic function on $\{0,1\}^n$ is congruent to* 1 (mod p)*.*

To prove this, we will prove two easy lemmas and an abstract theorem. First, we will introduce the concept of set addition.

For any two sets A, B, we define the sum $A+B$ as the set $\{a+b \mid a \in A, b \in B\}$. To illustrate this, consider a simple example. Let $A = \{1,2,3\}, B = \{2,3,5\}$ with $A, B \subset \mathbb{Z}_7$. Then $A+B \subset \mathbb{Z}_7, A+B = \{1+2, 1+3, 1+5, 2+2, 2+3, 2+5, 3+2, 3+3, 3+5\} = \{0,1,3,4,5,6\}$

Lemma 4.2. *If $R+S = \mathbb{Z}_n$, $\{a\}+R+S = \mathbb{Z}_n$ for any $a \in \mathbb{Z}_n$.*

Proof. Assume there is some $x \in \mathbb{Z}_n$ that is not in $\{a\}+R+S$. There must be some $r \in R$ and $s \in S$ such that $r+s = x-a$, since $R+S = \mathbb{Z}_n$. But then

$a + r + s \in \{a\} + R + S$, and $a + r + s = a + (x - a) = x$, so $x \in \{a\} + R + S$, contradicting our assumption, so every $\{a\} + R + S = \mathbb{Z}_n$. □

Lemma 4.3. *For $R \subsetneq \mathbb{Z}_n$, $R \neq \emptyset$, if $n = p^s$ for some prime p and positive integer s, let $\mathscr{T} = \{\{a\} + R \mid a \in \mathbb{Z}_n\}$. Then $|\mathscr{T}| \equiv 0 \pmod{p}$.*

Proof. The operation $\{a\} + R$ is a group action of the group $\mathbb{Z}_n$ on subsets of $\mathbb{Z}_n$, where the action is to cyclically shift each element of R by a in $\mathbb{Z}_n$. $\mathscr{T}$, the set of all possible images of R under application of the group action, is by definition the *orbit* of R. From group theory, we know that the size of an orbit must divide the size of the group. Since $|\mathbb{Z}_n| = p^s$, we have $|\mathscr{T}| = 1$ or $|\mathscr{T}| \equiv 0 \pmod{p}$.

If $|\mathscr{T}| = 1$, then $\{a\} + R = R$ for every $a \in \mathbb{Z}_n$. Let $r \in R$. For an arbitrary $b \in \mathbb{Z}_p$, let $a = b - r$. Then $a + r \in R$ by the definition of the action and the properties of R. But that says that $a + r = (b - r) + r = b \in R$. Since b was an arbitrary element of $\mathbb{Z}_n$, we conclude that $\mathbb{Z}_n \subset R$. This contradicts the assumption that $R \subsetneq \mathbb{Z}_n$, so $|\mathscr{T}| \neq 1$, and we have the claim. □

Theorem 4.4. *Given $S \subset \mathbb{Z}_n$, $S \neq \emptyset$, where $n = p^t$ for some prime p and positive integer t,*

$$\sum_{\substack{\emptyset \neq R \subset \mathbb{Z}_n \\ R : R + S = \mathbb{Z}_n}} (-1)^{|R|} \equiv -1 \pmod{p}$$

.

Proof. For any $R \subsetneq \mathbb{Z}_n$ satisfying the condition of the summation, consider the family $F = \{\{0\} + R, \{1\} + R, ..., \{n - 1\} + R\}$. By Lemma 4.3, there are $0 \pmod{p}$ distinct sets in this family. But $|\{a\} + R| = |\{a + r \mid r \in R\}| = |R|$, so $\sum_{R \in F} (-1)^{|R|} = |F|(-1)^{|R|} \equiv 0 \pmod{p}$.

If $R = \mathbb{Z}_n$, then for any $a \in \mathbb{Z}_n$, $\{a\} + R = \mathbb{Z}_n = R$, which is another way of saying that the size of the orbit of $\mathbb{Z}_n$ is 1, because for any $r \in \mathbb{Z}_n$, $r + a \in \mathbb{Z}_n$. $|\mathbb{Z}_n| = n$, so $(-1)^{|\mathbb{Z}_n|} = -1$, for $p > 2$.

Therefore, for p prime and greater than 2, we have $\sum_R (-1)^{|R|} \equiv -1 \pmod{p}$.

Finally, if $p = 2$, we see that by similar reasoning, $\sum_R (-1)^{|R|} = (-1)^n = \pm 1$. But $1 \equiv -1 \pmod{2}$, so in either case, $\sum_R (-1)^{|R|} \equiv 1 \pmod{p}$. □

Now we can prove the theorem for minterm-cyclic functions.

Proof of Theorem 4.1. The representing polynomial $p_f(x)$ has the form

$$p_f(x) = 1 - \prod_{i=0}^{n-1}(1 - \prod_{j\in S} x_{i+j}) = 1 - \prod_{i=0}^{n-1}(1 - \prod_{j\in\{i\}+S} x_j)$$

where S is the support of the minterm m.

We note that a degree n term in $p_f(x)$ is of the form $1-\left(\sum_{R+S=\{0,\ldots n-1\}}(-1)^{|R|}\right)\prod_{i=1}^{n} x_i$, where $R \subset \mathbb{Z}_n, R \neq \emptyset$. By the previous theorem, $\sum_{R+S=\mathbb{Z}_n}(-1)^{|R|} \equiv -1 \pmod{p}$, so a degree-$n$ term is of the form $1-((-1)\prod_{i=1}^{n} x_i)$.

Since this term is negated in $p_f(x)$, the coefficient of a degree-n term in $p_f(x)$ is congruent to 1 (mod p). □

Theorem 4.5. *For $n = 2p^s$, where p is a prime and s is a positive integer, any monotone minterm-cyclic function f_m on $\{0,1\}^n$ has* $\deg(f_m) = n$.

Proof. We first note that we ignore the case where $p = 2$, as if $p = 2$, then the function falls under Theorem 4.1.

As above, with minterm m, any R such that $R + S = \mathbb{Z}_n$, $S = support(m)$, will have $|orb(R)|$ dividing n. If $|orbR| = p^i, i > 0$, then R will contribute 0 (mod p) to the coefficient. If $|orb(R)| = 2$, then the orbit-stabilizer theorem from Group Theory tell us that $|stab(R)| = p^s$, where $stab(R)$ is the stabilizer of R, the set of elements of the group which map R to itself.

Since $|stab(R)| = p^s = n/2$, we know that it is generated by the operation $i \mapsto i+2 \pmod{n}$, or shifting right by 2. It then follows that R must be either $\{0,2,4,\ldots\}$ or $\{1,3,5,\ldots\}$, since these are the sets that are unaffected by any number of right-shifts by 2.

If these R's appear in the summation from Theorem 4.4, then they will each contribute ±1 to the sum. In that case, the possible values of the sum are $-1+2 \equiv 1 \pmod{p}$, $-1-2 \equiv -3 \pmod{p}$, and $-1+1-1 \equiv -1 \pmod{p}$. If $p = 3$, these R's will be $\{0,2\}$ and $\{1\}$, which will contribute 1 and -1 respectively, giving a sum of $-1 \pmod{p}$.

For $p > 3$, we have the absolute value of the sum less than p, and thus not congruent to 0 (mod p). In each case, then, the coefficient of the degree-n term of the representing polynomial is non-zero, so the polynomial degree is n. □

Chapter 5

Conjectures from Observed Patterns

In this chapter we give some interesting properties of minterm-cyclic functions that we discovered through calculating a large set of cases. There are a number of observable patterns. For the following hypotheses, enough data has been collected that these are easily believed, but no proof is currently known.

Conjecture 5.1. *For* $f_{\mathscr{P}}$ *a monotone minterm-cyclic function (i.e. with* $\mathscr{P} \in \{1,\star\}^*$*),* $\deg(f_{\mathscr{P}}) < n$ *only if* $n \equiv 0 \pmod{12}$*. Further,* $\deg(f_{\mathscr{P}}) < n$ *only if* $weight(\mathscr{P}) = 3$

Conjecture 5.2. *The coefficients of the ordinary generating function for the degree-*n *terms of monotone minterm-cyclic functions with minterm* m *are periodic if and only if* m *is equal to* $reverse(m)$*.*

Conjecture 5.3. *The ordinary generating function for the degree-*n *terms of monotone minterm-cyclic functions with minterm* m *is equal to the ordinary generating function for the monotone minterm-cyclic functions with minterm* $reverse(m)$

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Appendix - Macaulay2 Code and Generated Data

mincyc.m2

```
-- Amit Chakrabarti and Edward Talmage

-- script to determine degree-n coefficient of the multilinear polynomial
-- corresponding the the Boolean function f given by f(x) = 1 iff x contains
-- a cyclic shift of a given minterm.  The minterm is specified by a pair of
-- sequences (zeros, ones), each with elements in {0,1,...,n-1}, indicating
-- the locations of the 0s and 1s in the minterm.  Obviously these sequences
-- must not intersect.

-- If the variables are $x_0, ..., x_{n-1}$ then this polynomial is precisely
-- $$ 1- \prod_{i=0}^{n-1} (1 - \prod_{j\in P} (1-x_{i+j})\prod_{j\in Q} x_{i+f}) $$,
-- where P = zeros, ! = ones, arithmetic on indices is mon n, and with the
-- usual reduction rules x_i^2 = x_i for each index i.

-- The consecutive-ones special case is P = \emptyset, Q = {0,1,...,k-1}.

matchpoly = (n, zeros, ones) -> (
        R = ZZ[x_0 .. x_n] / ((0..<n) / (i -> x_i^2 - x_i));
        1 - product(n, i -> 1-
        product(length ones, j -> x_((i + ones_j) % n)) *
        product(length zeros, j -> 1 - x_((i + zeros_j) % n))
        )
)

maxcoeff = (n, zeros, ones) -> (
--             << n | "\n";
        p = matchpoly(n, zeros, ones);
        coefficient(product(n, i -> x_i), p)
)

printToFile = (zeros, ones, outputFile, maxN) -> (
     outputFile << ones << "; ";
     scan(1..maxN, (n -> outputFile << maxcoeff(n, zeros, ones) | "; "));
     outputFile << endl;
     outputFile << flush;
)

mintermsFromFile = (mintermFile, outputFile, maxN) -> (
     minterms = lines get mintermFile;
     scan(minterms, (minterm ->
```

```
               printToFile({}, value(minterm), outputFile, maxN)
               )
     );
)

autoMinterms = (mintermFile, coefficientFile, k, maxN) -> (
     outputFile = coefficientFile << ";";
     scan(maxN, n -> outputFile << n+1 << "; ");
     outputFile << endl;
     for i from 1 to k do (
               minterms = createMintermFile(i, mintermFile);
               mintermsFromFile(mintermFile, outputFile, maxN);
          );
     outputFile << close;
     )
```

create_minterms.m2

```
-- Edward Talmage

-- This file contains functions that generate minterms for mincyc.m2 to analyze

createMinterms = (k, minterms) -> (
--     << "k: " << k << ", input minterms: " << minterms << endl;

     part1 = {};
     part1 = apply(minterms, (minterm -> k | "," | minterm ));
--     << "part1: " << part1 << endl;

     minterms = {{minterms}, part1};
--     << "k: " << k << ", pre-flattened minterms: " << minterms << endl;
     minterms = flatten(flatten(minterms));
--     << "k: " << k << ", partial minterms: " << minterms<< endl;
     if(k-1 > 0)
     then minterms = createMinterms(k-1,minterms)
     else minterms = apply(minterms, (minterm -> "{0," | minterm));

--     << "Final minterms: " << minterms << endl;
     return minterms;
)

createAllMinterms  = (k) -> (
     mintermEnd = k | "}";
     minterms = {mintermEnd};
     if (k-1 > 0)
     then minterms = createMinterms(k-1, minterms)
     else minterms = apply(minterms, (minterm -> "{0," | minterm));

--     << "minterms: " << minterms;
     return minterms;
)

createMintermFile = (k, mintermFile) -> (
     minterms = createAllMinterms(k);
     mintermFile = mintermFile << "";

     scan(minterms, (minterm -> mintermFile << minterm << endl));
     mintermFile << close;

     return "minterms"
     )
```

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1}	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1
{0, 2}	1	-1	-2	-1	1	-4	1	-1	-2	-1	1	-4	1	-1	-2	-1	1	-4	1	-1	-2	-1	1	-4	1
{0, 1, 2}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	1	1	-3	1
{0, 3}	1	1	1	1	1	1	1	1	-8	1	1	1	1	1	1	1	1	-8	1	1	1	1	1	1	1
{0, 2, 3}	1	1	-2	-3	1	4	-6	-3	7	1	-10	0	14	-6	-17	13	18	-23	-18	37	12	-54	1	72	-24
{0, 1, 3}	1	1	-2	-3	1	4	-6	-3	7	1	-10	0	14	-6	-17	13	18	-23	-18	37	12	-54	1	72	-24
{0, 1, 2, 3}	1	1	1	1	-4	1	1	1	1	-4	1	1	1	1	-4	1	1	1	1	-4	1	1	1	1	-4
{0, 4}	1	-1	-2	-1	1	-4	1	-1	-2	-1	1	-16	1	-1	-2	-1	1	-4	1	-1	-2	-1	1	-16	1
{0, 3, 4}	1	1	-2	1	1	4	1	-7	7	1	-10	4	1	1	-2	-7	18	-5	-18	21	-2	-10	1	-4	26
{0, 2, 4}	1	-1	1	-1	1	-1	1	-9	1	-1	1	-1	1	-1	1	-9	1	-1	1	-1	1	-1	1	-9	1
{0, 2, 3, 4}	1	1	1	-3	-4	1	8	-3	-8	-4	12	9	-12	-20	11	29	1	-44	-18	52	50	-54	-91	33	146
{0, 1, 4}	1	1	-2	1	1	4	1	-7	7	1	-10	4	1	1	-2	-7	18	-5	-18	21	-2	-10	1	-4	26
{0, 1, 3, 4}	1	1	-2	-3	-4	-2	1	-3	-11	-4	1	-6	-12	-13	-7	-3	-16	-29	-18	-8	-23	-43	-45	-30	-29
{0, 1, 2, 4}	1	1	1	-3	-4	1	8	-3	-8	-4	12	9	-12	-20	11	29	1	-44	-18	52	50	-54	-91	33	146
{0, 1, 2, 3, 4}	1	1	1	1	1	-5	1	1	1	1	1	-5	1	1	1	1	1	-5	1	1	1	1	1	-5	1
{0, 5}	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1	1	-32	1	1	-2	1	1	-2	1	1	-2	1
{0, 4, 5}	1	1	1	1	1	1	-6	-7	1	11	-10	1	14	-6	-14	-7	18	1	-18	11	36	-32	-45	41	26
{0, 3, 5}	1	1	-2	-3	1	4	1	-3	7	11	-10	0	14	1	-17	-3	18	-5	-37	7	40	-32	-45	48	51
{0, 3, 4, 5}	1	1	1	-3	1	1	8	-3	-8	1	12	-3	-12	-6	16	13	-16	-26	20	37	-13	-54	1	69	26
{0, 2, 5}	1	1	-2	-3	1	4	1	-3	7	11	-10	0	14	1	-17	-3	18	-5	-37	7	40	-32	-45	48	51
{0, 2, 4, 5}	1	1	1	-3	1	1	1	-3	-8	1	12	-3	-12	1	16	-3	-16	-8	20	17	-20	-32	24	45	-24
{0, 2, 3, 5}	1	1	-2	1	1	-2	1	1	-11	1	1	-2	1	1	-2	1	1	-11	1	1	-2	1	1	-2	1
{0, 2, 3, 4, 5}	1	1	1	1	-4	-5	1	9	1	-4	-10	-5	14	15	-4	-23	-16	13	39	16	-41	-54	1	75	71
{0, 1, 5}	1	1	1	1	1	1	-6	-7	1	11	-10	1	14	-6	-14	-7	18	1	-18	11	36	-32	-45	41	26
{0, 1, 4, 5}	1	1	1	1	1	1	1	1	1	1	1	1	-12	1	1	1	1	1	1	1	1	1	1	1	1
{0, 1, 3, 5}	1	1	1	-3	1	1	1	-3	-8	1	12	-3	-12	1	16	-3	-16	-8	20	17	-20	-32	24	45	-24
{0, 1, 3, 4, 5}	1	1	1	-3	-4	-5	1	5	1	-14	-10	3	14	1	-19	-27	1	31	20	-38	-62	-10	70	59	-54
{0, 1, 2, 5}	1	1	1	-3	1	1	8	-3	-8	1	12	-3	-12	-6	16	13	-16	-26	20	37	-13	-54	1	69	26
{0, 1, 2, 4, 5}	1	1	1	-3	-4	-5	1	5	1	-14	-10	3	14	1	-19	-27	1	31	20	-38	-62	-10	70	59	-54
{0, 1, 2, 3, 5}	1	1	1	1	-4	-5	1	9	1	-4	-10	-5	14	15	-4	-23	-16	13	39	16	-41	-54	1	75	71
{0, 1, 2, 3, 4, 5}	1	1	1	1	1	1	-6	1	1	1	1	1	1	-6	1	1	1	1	1	1	-6	1	1	1	1
{0, 6}	1	-1	1	-1	1	-1	1	-1	-8	-1	1	-1	1	-1	1	-1	1	-64	1	-1	1	-1	1	-1	1
{0, 5, 6}	1	1	-2	-3	1	-2	1	-3	7	11	1	-18	14	1	-17	13	18	-29	-18	7	-2	1	1	-18	26
{0, 4, 6}	1	-1	-2	-1	1	-4	-6	-9	7	-1	-10	-16	14	-36	-17	-9	18	-49	-18	-1	12	-100	1	0	-24
{0, 4, 5, 6}	1	1	1	-3	1	1	1	-3	-8	1	12	-3	-12	1	16	-3	-16	-8	20	17	-20	-32	24	45	-24
{0, 3, 6}	1	1	1	-3	1	1	1	-3	1	1	1	-27	1	1	1	-3	1	1	1	-3	1	1	1	-27	1
{0, 3, 5, 6}	1	1	-2	1	1	4	8	1	-2	1	12	-8	-12	-6	-2	1	-16	-14	20	21	5	-10	24	40	1
{0, 3, 4, 6}	1	1	-2	-3	-4	4	1	-3	-2	-4	12	-12	-12	1	-7	-3	-16	-14	1	-8	-2	-32	1	12	-29
{0, 3, 4, 5, 6}	1	1	1	1	-4	1	1	9	1	-14	1	1	14	1	-19	-7	1	37	1	-34	-20	1	70	9	-54
{0, 2, 6}	1	-1	-2	-1	1	-4	-6	-9	7	-1	-10	-16	14	-36	-17	-9	18	-49	-18	-1	12	-100	1	0	-24
{0, 2, 5, 6}	1	1	-2	-3	1	4	8	-3	-11	1	12	-12	-38	22	28	-19	-33	13	58	17	-100	-54	139	84	-224

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 2, 4, 6}	1	-1	1	-1	-4	-1	1	-1	1	-16	1	-1	1	-1	-4	-1	1	-1	1	-16	1	-1	1	-1	-4
{0, 2, 4, 5, 6}	1	1	1	-3	-4	1	1	-3	1	-4	1	-3	1	1	-4	-3	1	1	1	-8	1	1	1	-3	-4
{0, 2, 3, 6}	1	1	-2	-3	-4	4	1	-3	-2	-4	12	-12	-12	1	-7	-3	-16	-14	1	-8	-2	-32	1	12	-29
{0, 2, 3, 5, 6}	1	1	-2	1	-4	-2	1	1	7	-14	-10	10	1	1	-7	-15	1	7	20	-14	-44	12	24	10	-4
{0, 2, 3, 4, 6}	1	1	1	-3	1	1	1	-3	1	-9	1	-3	1	1	1	-3	1	1	1	-13	1	1	1	-3	1
{0, 2, 3, 4, 5, 6}	1	1	1	1	1	-5	-6	1	10	1	1	-5	-12	-6	16	17	1	-14	-18	-19	15	45	24	-29	-49
{0, 1, 6}	1	1	-2	-3	1	-2	1	-3	7	11	1	-18	14	1	-17	13	18	-29	-18	7	-2	1	1	-18	26
{0, 1, 5, 6}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	-13	1	-3	1	1	1	-3	1	1	1	-3	1
{0, 1, 4, 6}	1	1	-2	-3	1	4	8	-3	-11	1	12	-12	-38	22	28	-19	-33	13	58	17	-100	-54	139	84	-224
{0, 1, 4, 5, 6}	1	1	1	-3	1	1	1	5	1	1	-10	9	1	1	-14	5	1	1	1	-3	1	-10	24	-7	1
{0, 1, 3, 6}	1	1	-2	1	1	4	8	1	-2	1	12	-8	-12	-6	-2	1	-16	-14	20	21	5	-10	24	40	1
{0, 1, 3, 5, 6}	1	1	1	1	1	1	1	1	1	-9	1	25	27	-13	-29	-15	1	1	1	-9	1	45	47	-71	-149
{0, 1, 3, 4, 6}	1	1	-2	1	-4	-2	1	1	7	-14	-10	10	1	1	-7	-15	1	7	20	-14	-44	12	24	10	-4
{0, 1, 3, 4, 5, 6}	1	1	1	1	-4	-5	-6	1	10	6	-10	-17	-12	8	26	17	-16	-50	-37	26	78	56	-45	-137	-104
{0, 1, 2, 6}	1	1	1	-3	1	1	1	-3	-8	1	12	-3	-12	1	16	-3	-16	-8	20	17	-20	-32	24	45	-24
{0, 1, 2, 5, 6}	1	1	1	-3	1	1	1	5	1	1	-10	9	1	1	-14	5	1	1	1	-3	1	-10	24	-7	1
{0, 1, 2, 4, 6}	1	1	1	-3	-4	1	1	-3	1	-4	1	-3	1	1	-4	-3	1	1	1	-8	1	1	1	-3	-4
{0, 1, 2, 4, 5, 6}	1	1	1	-3	-4	-5	-6	-3	1	-4	-10	-21	-12	-6	-4	-19	-33	-41	-37	-28	-27	-54	-91	-117	-104
{0, 1, 2, 3, 6}	1	1	1	1	-4	1	1	9	1	-14	1	1	14	1	-19	-7	1	37	1	-34	-20	1	70	9	-54
{0, 1, 2, 3, 5, 6}	1	1	1	1	-4	-5	-6	1	10	6	-10	-17	-12	8	26	17	-16	-50	-37	26	78	56	-45	-137	-104
{0, 1, 2, 3, 4, 6}	1	1	1	1	1	-5	-6	1	10	1	1	-5	-12	-6	16	17	1	-14	-18	-19	15	45	24	-29	-49
{0, 1, 2, 3, 4, 5, 6}	1	1	1	1	1	1	1	-7	1	1	1	1	1	1	1	-7	1	1	1	1	1	1	1	-7	1
{0, 7}	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1	1	-2	1	1	-128	1	1	-2	1
{0, 6, 7}	1	1	-2	-3	1	-2	1	-3	7	1	-10	-18	1	29	-17	-3	18	-29	-18	37	-2	-10	-45	-18	26
{0, 5, 7}	1	1	1	-3	1	1	1	-3	1	11	-10	-3	1	29	-14	13	18	1	-18	7	1	-10	1	-3	51
{0, 5, 6, 7}	1	1	1	1	1	1	1	1	-8	1	12	1	-12	1	16	1	-16	-8	1	21	1	-32	1	49	1
{0, 4, 7}	1	1	-2	1	1	4	1	-7	7	1	1	4	14	29	-17	-7	18	-23	-18	1	-2	1	-45	-4	26
{0, 4, 6, 7}	1	1	-2	-3	-4	4	-6	-3	-11	-4	12	-12	-12	8	8	-19	-50	13	20	-28	-51	-10	70	-36	-129
{0, 4, 5, 7}	1	1	1	-3	1	1	-6	-3	-8	1	12	-3	-38	8	31	-19	-50	10	58	-23	-90	-32	93	69	-149
{0, 4, 5, 6, 7}	1	1	1	1	-4	1	1	1	1	-14	1	13	1	1	-19	1	18	1	1	-34	1	45	1	-11	-54
{0, 3, 7}	1	1	-2	1	1	4	1	-7	7	1	1	4	14	29	-17	-7	18	-23	-18	1	-2	1	-45	-4	26
{0, 3, 6, 7}	1	1	-2	-3	-4	4	1	-3	-2	-4	12	-12	-12	1	-7	13	-16	-14	20	-8	19	-32	1	36	-29
{0, 3, 5, 7}	1	1	1	-3	1	1	1	-3	1	1	12	9	-12	1	16	-3	-16	1	20	-3	-20	-10	1	9	1
{0, 3, 5, 6, 7}	1	1	1	1	-4	1	8	9	1	-14	-10	25	14	-6	-49	-23	52	55	-18	-114	-55	144	185	-63	-304
{0, 3, 4, 7}	1	1	-2	1	-4	-2	1	1	-11	-4	1	-2	-12	1	-7	1	1	-11	1	-4	-2	1	1	-2	-4
{0, 3, 4, 6, 7}	1	1	-2	-3	1	-2	1	5	7	1	-10	18	14	1	-2	5	1	7	1	-3	-23	-32	24	2	-49
{0, 3, 4, 5, 7}	1	1	1	-3	-4	-5	8	5	1	-14	1	15	14	-20	-19	-11	35	13	-18	-78	8	67	70	-97	-104
{0, 3, 4, 5, 6, 7}	1	1	1	1	1	-5	1	1	10	1	-10	-5	1	1	16	1	-16	-14	1	21	22	-10	-22	-29	1
{0, 2, 7}	1	1	1	-3	1	1	1	-3	1	11	-10	-3	1	29	-14	13	18	1	-18	7	1	-10	1	-3	51
{0, 2, 6, 7}	1	1	1	-3	1	1	-6	-3	-8	1	1	-3	-12	8	31	-19	-33	-8	20	-3	-27	1	24	-3	-49
{0, 2, 5, 7}	1	1	1	1	1	1	1	1	1	1	1	1	-12	1	1	1	-16	1	1	1	1	1	1	1	1

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 2, 5, 6, 7}	1	1	1	1	1	1	8	9	1	-9	-10	13	14	-20	-44	-7	18	37	1	-49	-13	100	116	-27	-174
{0, 2, 4, 7}	1	1	1	-3	1	1	1	-3	1	1	12	9	-12	1	16	-3	-16	1	20	-3	-20	-10	1	9	1
{0, 2, 4, 6, 7}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-3	14	1	-19	-3	18	1	-18	-8	22	-10	-22	21	21
{0, 2, 4, 5, 7}	1	1	1	1	1	-5	1	1	1	1	-10	-5	1	1	1	1	1	-5	1	1	1	-10	1	-5	1
{0, 2, 4, 5, 6, 7}	1	1	1	1	-4	-5	1	1	1	6	-10	-5	1	1	11	1	-16	-5	1	6	22	-10	-22	-5	-4
{0, 2, 3, 7}	1	1	1	-3	1	1	-6	-3	-8	1	12	-3	-38	8	31	-19	-50	10	58	-23	-90	-32	93	69	-149
{0, 2, 3, 6, 7}	1	1	1	-3	-4	1	1	5	1	-4	-10	21	14	-27	-34	21	35	-17	-37	-28	22	34	47	-67	-129
{0, 2, 3, 5, 7}	1	1	1	1	1	-5	1	1	1	1	-10	-5	1	1	1	1	1	-5	1	1	1	-10	1	-5	1
{0, 2, 3, 5, 6, 7}	1	1	1	1	-4	-5	1	1	10	6	-21	-17	1	29	26	-15	-50	-32	20	86	64	-65	-160	-89	146
{0, 2, 3, 4, 7}	1	1	1	-3	-4	-5	8	5	1	-14	1	15	14	-20	-19	-11	35	13	-18	-78	8	67	70	-97	-104
{0, 2, 3, 4, 6, 7}	1	1	1	-3	1	-5	1	-3	10	1	-10	-21	14	1	16	-19	1	-32	20	-3	64	-54	-22	-69	101
{0, 2, 3, 4, 5, 7}	1	1	1	1	-4	1	1	1	1	-4	-10	1	1	1	-4	1	1	1	1	-4	1	-10	1	1	-4
{0, 2, 3, 4, 5, 6, 7}	1	1	1	1	1	1	-6	-7	1	11	1	1	1	-6	-14	-7	18	19	1	-9	-6	-21	-22	17	51
{0, 1, 7}	1	1	-2	-3	1	-2	1	-3	7	1	-10	-18	1	29	-17	-3	18	-29	-18	37	-2	-10	-45	-18	26
{0, 1, 6, 7}	1	1	-2	1	1	-2	1	1	-11	1	1	-2	1	1	-2	1	-16	-47	-18	1	-2	1	1	-2	1
{0, 1, 5, 7}	1	1	1	-3	1	1	-6	-3	-8	1	1	-3	-12	8	31	-19	-33	-8	20	-3	-27	1	24	-3	-49
{0, 1, 5, 6, 7}	1	1	1	1	1	1	1	1	1	1	1	-11	14	1	1	-15	1	1	1	1	1	1	1	-11	26
{0, 1, 4, 7}	1	1	-2	-3	-4	4	1	-3	-2	-4	12	-12	-12	1	-7	13	-16	-14	20	-8	19	-32	1	36	-29
{0, 1, 4, 6, 7}	1	1	-2	1	-4	4	8	9	7	-4	1	4	1	-20	-37	-7	18	-5	-18	-24	26	67	47	-12	-54
{0, 1, 4, 5, 7}	1	1	1	-3	-4	1	1	5	1	-4	-10	21	14	-27	-34	21	35	-17	-37	-28	22	34	47	-67	-129
{0, 1, 4, 5, 6, 7}	1	1	1	1	-4	1	1	1	10	-4	1	-11	1	15	-4	1	-16	-8	20	-4	22	-21	-22	13	-4
{0, 1, 3, 7}	1	1	-2	-3	-4	4	-6	-3	-11	-4	12	-12	-12	8	8	-19	-50	13	20	-28	-51	-10	70	-36	-129
{0, 1, 3, 6, 7}	1	1	-2	1	-4	4	8	9	7	-4	1	4	1	-20	-37	-7	18	-5	-18	-24	26	67	47	-12	-54
{0, 1, 3, 5, 7}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-3	14	1	-19	-3	18	1	-18	-8	22	-10	-22	21	21
{0, 1, 3, 5, 6, 7}	1	1	1	1	-4	1	1	1	10	6	-10	-11	1	43	11	-31	-33	-8	39	26	1	-32	-91	-35	121
{0, 1, 3, 4, 7}	1	1	-2	-3	1	-2	1	5	7	1	-10	18	14	1	-2	5	1	7	1	-3	-23	-32	24	2	-49
{0, 1, 3, 4, 6, 7}	1	1	-2	1	1	-2	1	1	-2	1	-10	-26	-12	1	-2	1	1	-2	1	1	-2	-10	-45	-74	-49
{0, 1, 3, 4, 5, 7}	1	1	1	-3	1	-5	1	-3	10	1	-10	-21	14	1	16	-19	1	-32	20	-3	64	-54	-22	-69	101
{0, 1, 3, 4, 5, 6, 7}	1	1	1	1	1	-5	-6	-7	1	11	12	-5	-12	-20	-14	9	35	31	1	-49	-69	-32	47	107	101
{0, 1, 2, 7}	1	1	1	1	1	1	1	1	-8	1	12	1	-12	1	16	1	-16	-8	1	21	1	-32	1	49	1
{0, 1, 2, 6, 7}	1	1	1	1	1	1	1	1	1	1	1	-11	14	1	1	-15	1	1	1	1	1	1	1	-11	26
{0, 1, 2, 5, 7}	1	1	1	1	1	1	8	9	1	-9	-10	13	14	-20	-44	-7	18	37	1	-49	-13	100	116	-27	-174
{0, 1, 2, 5, 6, 7}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-16	1	1	1	1	1	1	1	1
{0, 1, 2, 4, 7}	1	1	1	1	-4	1	8	9	1	-14	-10	25	14	-6	-49	-23	52	55	-18	-114	-55	144	185	-63	-304
{0, 1, 2, 4, 6, 7}	1	1	1	1	-4	1	1	1	10	6	-10	-11	1	43	11	-31	-33	-8	39	26	1	-32	-91	-35	121
{0, 1, 2, 4, 5, 7}	1	1	1	1	-4	-5	1	1	10	6	-21	-17	1	29	26	-15	-50	-32	20	86	64	-65	-160	-89	146
{0, 1, 2, 4, 5, 6, 7}	1	1	1	1	-4	-5	-6	-7	1	6	1	-5	-25	-20	-4	9	18	-5	-37	-54	-48	1	47	35	-29
{0, 1, 2, 3, 7}	1	1	1	1	-4	1	1	1	1	-14	1	13	1	1	-19	1	18	1	1	-34	1	45	1	-11	-54
{0, 1, 2, 3, 6, 7}	1	1	1	1	-4	1	1	1	10	-4	1	-11	1	15	-4	1	-16	-8	20	-4	22	-21	-22	13	-4
{0, 1, 2, 3, 5, 7}	1	1	1	1	-4	-5	1	1	1	6	-10	-5	1	1	11	1	-16	-5	1	6	22	-10	-22	-5	-4
{0, 1, 2, 3, 5, 6, 7}	1	1	1	1	-4	-5	-6	-7	1	6	1	-5	-25	-20	-4	9	18	-5	-37	-54	-48	1	47	35	-29

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 2, 3, 4, 7}	1	1	1	1	1	-5	1	1	10	1	-10	-5	1	1	16	1	-16	-14	1	21	22	-10	-22	-29	1
{0, 1, 2, 3, 4, 6, 7}	1	1	1	1	1	-5	-6	-7	1	11	12	-5	-12	-20	-14	9	35	31	1	-49	-69	-32	47	107	101
{0, 1, 2, 3, 4, 5, 7}	1	1	1	1	1	1	-6	-7	1	11	1	1	1	-6	-14	-7	18	19	1	-9	-6	-21	-22	17	51
{0, 1, 2, 3, 4, 5, 6, 7}	1	1	1	1	1	1	1	1	-8	1	1	1	1	1	1	1	1	-8	1	1	1	1	1	1	1
{0, 8}	1	-1	-2	-1	1	-4	1	-1	-2	-1	1	-16	1	-1	-2	-1	1	-4	1	-1	-2	-1	1	-256	1
{0, 7, 8}	1	1	1	1	1	1	1	1	1	1	-10	1	14	29	1	-47	18	1	-37	21	1	-54	1	73	26
{0, 6, 8}	1	-1	-2	-1	1	-4	1	-1	7	-1	-10	-16	1	-1	-2	-49	18	-49	-18	-1	-2	-100	1	-16	26
{0, 6, 7, 8}	1	1	1	-3	-4	1	1	-3	1	-4	12	-3	-12	1	11	-3	-16	1	20	-8	-20	-32	24	45	-29
{0, 5, 8}	1	1	-2	1	1	4	-6	1	7	11	1	4	1	-6	-17	-47	18	-23	-18	11	12	1	1	76	51
{0, 5, 7, 8}	1	1	1	-3	1	1	-6	-3	-8	1	12	-3	-12	8	16	-3	-50	10	39	17	-48	-10	70	21	-74
{0, 5, 6, 8}	1	1	-2	-3	1	4	1	-3	-11	1	12	-12	-12	1	28	-19	-33	13	58	-3	-86	-10	93	12	-149
{0, 5, 6, 7, 8}	1	1	1	1	-4	1	1	1	1	-4	1	13	1	-13	-4	1	18	1	-18	-4	1	23	1	-35	-4
{0, 4, 8}	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	1	-81	1	-1	1	-1	1	-1	1	-1	1
{0, 4, 7, 8}	1	1	1	1	-4	1	1	-7	-8	-4	1	1	-12	1	11	-23	-16	-8	20	-4	1	1	24	17	-29
{0, 4, 6, 8}	1	-1	1	-1	-4	-1	8	-9	-8	-16	12	-1	-12	-64	11	-9	1	-64	-18	-16	50	-144	-91	-81	146
{0, 4, 6, 7, 8}	1	1	1	-3	1	1	8	-3	1	-9	1	-3	14	-20	-14	-3	35	1	-18	-33	50	23	1	-75	1
{0, 4, 5, 8}	1	1	1	1	1	1	1	-7	1	1	12	1	-12	1	16	-23	-16	1	20	1	-20	-10	1	17	1
{0, 4, 5, 7, 8}	1	1	1	-3	-4	-5	1	-3	1	-14	-10	-9	14	-27	-19	-19	1	-23	-18	-58	-20	-54	1	-81	-79
{0, 4, 5, 6, 8}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-3	14	-13	-19	-3	18	19	-37	-48	22	34	1	-51	-54
{0, 4, 5, 6, 7, 8}	1	1	1	1	1	-5	1	1	1	1	-10	-5	14	1	1	1	-16	-5	20	1	1	-10	-22	19	26
{0, 3, 8}	1	1	-2	1	1	4	-6	1	7	11	1	4	1	-6	-17	-47	18	-23	-18	11	12	1	1	76	51
{0, 3, 7, 8}	1	1	1	1	1	1	-6	-7	-8	1	12	1	-12	8	16	-39	-33	10	58	21	-27	12	24	-31	-124
{0, 3, 6, 8}	1	1	-2	-3	1	4	8	-3	-2	1	1	-12	-12	-20	-2	-3	-16	-14	20	17	5	1	1	12	1
{0, 3, 6, 7, 8}	1	1	1	-3	-4	1	8	-3	1	-14	1	21	14	-20	-19	-3	69	1	-37	-58	50	89	24	-171	-79
{0, 3, 5, 8}	1	1	-2	-3	1	-2	1	-3	-11	1	1	-6	1	-13	-2	-3	1	-29	1	-3	-2	1	1	-6	1
{0, 3, 5, 7, 8}	1	1	1	-3	1	-5	1	-3	1	1	1	3	14	-27	-14	29	35	-23	1	-23	1	1	47	-21	-24
{0, 3, 5, 6, 8}	1	1	-2	1	1	-2	1	1	7	1	1	10	14	1	-2	-15	1	7	1	1	-2	-21	-22	10	1
{0, 3, 5, 6, 7, 8}	1	1	1	1	-4	-5	1	9	10	-4	-10	-17	14	29	11	-23	-50	-14	58	76	1	-120	-114	39	221
{0, 3, 4, 8}	1	1	1	1	1	1	1	-7	1	1	12	1	-12	1	16	-23	-16	1	20	1	-20	-10	1	17	1
{0, 3, 4, 7, 8}	1	1	1	1	-4	-5	1	1	1	-4	1	-17	14	1	-19	1	1	-5	1	-4	1	1	1	-17	21
{0, 3, 4, 6, 8}	1	1	1	-3	-4	1	1	-3	1	-4	1	-3	14	-13	-19	-3	1	1	-18	-28	1	1	1	-27	-29
{0, 3, 4, 6, 7, 8}	1	1	1	-3	1	-5	1	5	10	1	1	-21	14	15	31	-27	-16	-32	39	17	43	-65	-45	-85	126
{0, 3, 4, 5, 8}	1	1	1	-3	1	-5	1	-3	1	-9	1	-9	1	-13	1	-3	1	-5	1	-13	1	1	1	-9	1
{0, 3, 4, 5, 7, 8}	1	1	1	-3	-4	1	1	5	1	6	1	-3	14	15	-4	5	1	1	1	2	1	-21	-22	-19	21
{0, 3, 4, 5, 6, 8}	1	1	1	1	-4	-5	-6	9	10	6	-10	-17	14	8	26	-7	-33	-32	1	66	36	-32	-114	-57	71
{0, 3, 4, 5, 6, 7, 8}	1	1	1	1	1	1	-6	1	1	11	1	-11	1	-6	1	1	18	1	-18	-9	-6	23	1	13	1
{0, 2, 8}	1	-1	-2	-1	1	-4	1	-1	7	-1	-10	-16	1	-1	-2	-49	18	-49	-18	-1	-2	-100	1	-16	26
{0, 2, 7, 8}	1	1	1	-3	1	1	1	-3	-8	1	12	-3	-12	1	16	-19	-50	-8	58	17	-83	-10	93	21	-124
{0, 2, 6, 8}	1	-1	-2	-1	-4	-4	1	-9	-11	-16	1	-4	-12	-1	-7	-9	-16	-121	-18	-16	-23	-1	-45	-36	-29
{0, 2, 6, 7, 8}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-15	14	15	-19	-19	18	19	-18	-68	1	34	-22	-39	46
{0, 2, 5, 8}	1	1	-2	-3	1	4	8	-3	-2	1	1	-12	-12	-20	-2	-3	-16	-14	20	17	5	1	1	12	1

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 2, 5, 7, 8}	1	1	1	1	1	1	8	1	1	1	-10	1	14	-20	-14	17	1	-17	1	21	8	-10	1	25	-24
{0, 2, 5, 6, 8}	1	1	-2	-3	-4	4	1	-3	7	-4	-10	-12	14	1	-37	-19	18	31	-18	-68	19	34	1	-12	-54
{0, 2, 5, 6, 7, 8}	1	1	1	1	-4	1	1	9	10	6	-10	-23	14	15	11	-23	-50	-8	20	66	22	-54	-91	-15	171
{0, 2, 4, 8}	1	-1	1	-1	-4	-1	8	-9	-8	-16	12	-1	-12	-64	11	-9	1	-64	-18	-16	50	-144	-91	-81	146
{0, 2, 4, 7, 8}	1	1	1	-3	-4	1	8	-3	1	-4	1	-3	14	-6	-19	13	52	-17	-18	-28	50	23	-22	-75	21
{0, 2, 4, 6, 8}	1	-1	1	-1	1	-1	1	-1	1	-1	1	-25	1	-1	1	-1	1	-1	1	-1	1	-1	1	-25	1
{0, 2, 4, 6, 7, 8}	1	1	1	-3	1	1	1	-3	1	1	1	-15	1	1	1	-3	1	1	1	-3	1	1	1	-15	1
{0, 2, 4, 5, 8}	1	1	1	-3	-4	1	1	-3	1	-4	1	-3	14	-13	-19	-3	1	1	-18	-28	1	1	1	-27	-29
{0, 2, 4, 5, 7, 8}	1	1	1	1	-4	-5	1	1	10	-4	-10	-17	1	29	11	-31	-33	-14	39	56	1	-76	-91	7	146
{0, 2, 4, 5, 6, 8}	1	1	1	-3	1	1	-6	-3	10	1	-10	-15	14	-6	-14	13	18	-26	-18	37	15	-54	1	57	-24
{0, 2, 4, 5, 6, 7, 8}	1	1	1	1	1	-5	-6	1	1	1	12	-5	-12	-6	1	1	18	13	-18	-19	-6	-10	24	43	1
{0, 2, 3, 8}	1	1	-2	-3	1	4	1	-3	-11	1	12	-12	-12	1	28	-19	-33	13	58	-3	-86	-10	93	12	-149
{0, 2, 3, 7, 8}	1	1	1	-3	1	1	1	-3	1	-9	1	9	1	-27	-44	13	18	1	-37	-13	22	45	-22	-63	-74
{0, 2, 3, 6, 8}	1	1	-2	-3	-4	4	1	-3	7	-4	-10	-12	14	1	-37	-19	18	31	-18	-68	19	34	1	-12	-54
{0, 2, 3, 6, 7, 8}	1	1	1	-3	-4	1	1	5	10	6	-10	-27	1	29	11	-59	-50	28	58	22	-20	-32	-22	5	121
{0, 2, 3, 5, 8}	1	1	-2	1	1	-2	1	1	7	1	1	10	14	1	-2	-15	1	7	1	1	-2	-21	-22	10	1
{0, 2, 3, 5, 7, 8}	1	1	1	1	1	-5	1	1	10	1	1	-17	-12	15	16	-15	1	4	1	1	1	1	1	-17	1
{0, 2, 3, 5, 6, 8}	1	1	-2	1	-4	-2	-6	1	-2	-4	1	-26	1	-6	-7	1	-16	-2	-18	-4	-9	-21	1	-50	-4
{0, 2, 3, 5, 6, 7, 8}	1	1	1	1	-4	-5	-6	1	1	6	1	-17	-12	-6	11	17	1	-23	-37	-14	15	45	24	-41	-79
{0, 2, 3, 4, 8}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-3	14	-13	-19	-3	18	19	-37	-48	22	34	1	-51	-54
{0, 2, 3, 4, 7, 8}	1	1	1	-3	-4	-5	1	5	1	6	-10	-21	1	29	-4	-27	-50	-5	20	22	-20	-54	-68	-37	96
{0, 2, 3, 4, 6, 8}	1	1	1	-3	1	1	-6	-3	10	1	-10	-15	14	-6	-14	13	18	-26	-18	37	15	-54	1	57	-24
{0, 2, 3, 4, 6, 7, 8}	1	1	1	-3	1	-5	-6	-3	1	1	12	-9	-25	-20	16	13	1	-5	-18	-43	-27	12	47	39	-24
{0, 2, 3, 4, 5, 8}	1	1	1	1	-4	-5	-6	9	10	6	-10	-17	14	8	26	-7	-33	-32	1	66	36	-32	-114	-57	71
{0, 2, 3, 4, 5, 7, 8}	1	1	1	1	-4	1	-6	1	1	6	12	-23	-12	-6	11	17	1	1	-37	-14	-6	34	70	-23	-54
{0, 2, 3, 4, 5, 6, 8}	1	1	1	1	1	-5	1	1	1	1	1	-17	1	1	1	1	1	-5	1	1	1	1	1	-17	1
{0, 2, 3, 4, 5, 6, 7, 8}	1	1	1	1	1	1	1	-7	-8	1	12	1	1	1	1	-7	-16	-8	20	21	1	-10	1	-7	-24
{0, 1, 8}	1	1	1	1	1	1	1	1	1	1	-10	1	14	29	1	-47	18	1	-37	21	1	-54	1	73	26
{0, 1, 7, 8}	1	1	1	-3	-4	1	1	-3	1	-4	1	-3	1	1	-4	-3	1	1	1	-8	1	-43	1	-3	-4
{0, 1, 6, 8}	1	1	1	-3	1	1	1	-3	-8	1	12	-3	-12	1	16	-19	-50	-8	58	17	-83	-10	93	21	-124
{0, 1, 6, 7, 8}	1	1	1	1	-4	1	1	1	1	-14	-10	-11	1	15	-4	-15	1	19	20	-14	-20	-32	-22	13	21
{0, 1, 5, 8}	1	1	1	1	1	1	-6	-7	-8	1	12	1	-12	8	16	-39	-33	10	58	21	-27	12	24	-31	-124
{0, 1, 5, 7, 8}	1	1	1	-3	-4	1	-6	-3	1	-14	-10	9	14	8	-19	13	18	1	-37	-58	-6	12	1	-39	-54
{0, 1, 5, 6, 8}	1	1	1	-3	1	1	1	-3	1	-9	1	9	1	-27	-44	13	18	1	-37	-13	22	45	-22	-63	-74
{0, 1, 5, 6, 7, 8}	1	1	1	1	-4	1	1	1	1	6	1	1	-12	1	11	1	1	-17	1	6	1	1	1	1	-4
{0, 1, 4, 8}	1	1	1	1	-4	1	1	-7	-8	-4	1	1	-12	1	11	-23	-16	-8	20	-4	1	1	24	17	-29
{0, 1, 4, 7, 8}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	-13	1	-3	1	1	1	-3	1	-21	1	-3	1
{0, 1, 4, 6, 8}	1	1	1	-3	-4	1	8	-3	1	-4	1	-3	14	-6	-19	13	52	-17	-18	-28	50	23	-22	-75	21
{0, 1, 4, 6, 7, 8}	1	1	1	1	1	1	8	9	10	1	-10	-11	14	22	1	-55	-67	-8	39	21	-34	-76	1	165	251
{0, 1, 4, 5, 8}	1	1	1	1	-4	-5	1	1	1	-4	1	-17	14	1	-19	1	1	-5	1	-4	1	1	1	-17	21
{0, 1, 4, 5, 7, 8}	1	1	1	-3	1	-5	1	5	10	1	1	3	14	15	16	-11	1	4	20	-3	-20	-43	-22	-13	1

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 4, 5, 6, 8}	1	1	1	-3	-4	-5	1	5	1	6	-10	-21	1	29	-4	-27	-50	-5	20	22	-20	-54	-68	-37	96
{0, 1, 4, 5, 6, 7, 8}	1	1	1	1	1	-5	1	1	1	11	1	-5	-12	1	1	17	1	-5	-18	-9	1	23	24	-5	-24
{0, 1, 3, 8}	1	1	1	-3	1	1	-6	-3	-8	1	12	-3	-12	8	16	-3	-50	10	39	17	-48	-10	70	21	-74
{0, 1, 3, 7, 8}	1	1	1	-3	-4	1	-6	-3	1	-14	-10	9	14	8	-19	13	18	1	-37	-58	-6	12	1	-39	-54
{0, 1, 3, 6, 8}	1	1	1	1	1	1	8	1	1	1	-10	1	14	-20	-14	17	1	-17	1	21	8	-10	1	25	-24
{0, 1, 3, 6, 7, 8}	1	1	1	1	-4	1	8	9	10	6	-10	-11	1	-6	11	-55	-33	-26	20	26	29	-10	24	69	121
{0, 1, 3, 5, 8}	1	1	1	-3	1	-5	1	-3	1	1	1	3	14	-27	-14	29	35	-23	1	-23	1	1	47	-21	-24
{0, 1, 3, 5, 7, 8}	1	1	1	-3	-4	-5	1	-3	1	-4	-10	-21	1	29	-4	-67	-50	31	39	-28	-62	-54	-22	-21	-4
{0, 1, 3, 5, 6, 8}	1	1	1	1	1	-5	1	1	10	1	1	-17	-12	15	16	-15	1	4	1	1	1	1	1	-17	1
{0, 1, 3, 5, 6, 7, 8}	1	1	1	1	-4	-5	1	1	1	6	12	-5	-12	-13	11	33	18	-23	-37	-14	22	34	24	-5	-29
{0, 1, 3, 4, 8}	1	1	1	-3	-4	-5	1	-3	1	-14	-10	-9	14	-27	-19	-19	1	-23	-18	-58	-20	-54	1	-81	-79
{0, 1, 3, 4, 7, 8}	1	1	1	-3	1	-5	1	5	10	1	1	3	14	15	16	-11	1	4	20	-3	-20	-43	-22	-13	1
{0, 1, 3, 4, 6, 8}	1	1	1	1	-4	-5	1	1	10	-4	-10	-17	1	29	11	-31	-33	-14	39	56	1	-76	-91	7	146
{0, 1, 3, 4, 6, 7, 8}	1	1	1	1	1	-5	1	1	1	1	1	-17	-25	-13	16	33	18	-23	-37	-19	22	45	24	-41	-99
{0, 1, 3, 4, 5, 8}	1	1	1	-3	-4	1	1	5	1	6	1	-3	14	15	-4	5	1	1	1	2	1	-21	-22	-19	21
{0, 1, 3, 4, 5, 7, 8}	1	1	1	-3	1	1	1	-3	1	1	1	-15	-25	-13	1	-3	1	1	1	-3	1	1	1	-15	-49
{0, 1, 3, 4, 5, 6, 8}	1	1	1	1	-4	1	-6	1	1	6	12	-23	-12	-6	11	17	1	1	-37	-14	-6	34	70	-23	-54
{0, 1, 3, 4, 5, 6, 7, 8}	1	1	1	1	1	1	-6	-7	-8	1	12	13	1	-6	-14	-23	-16	10	39	41	15	-32	-68	-67	-24
{0, 1, 2, 8}	1	1	1	-3	-4	1	1	-3	1	-4	12	-3	-12	1	11	-3	-16	1	20	-8	-20	-32	24	45	-29
{0, 1, 2, 7, 8}	1	1	1	1	-4	1	1	1	1	-14	-10	-11	1	15	-4	-15	1	19	20	-14	-20	-32	-22	13	21
{0, 1, 2, 6, 8}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-15	14	15	-19	-19	18	19	-18	-68	1	34	-22	-39	46
{0, 1, 2, 6, 7, 8}	1	1	1	1	-4	1	1	1	1	-4	1	1	1	1	-4	1	1	-17	1	-4	1	1	1	1	-4
{0, 1, 2, 5, 8}	1	1	1	-3	-4	1	8	-3	1	-14	1	21	14	-20	-19	-3	69	1	-37	-58	50	89	24	-171	-79
{0, 1, 2, 5, 7, 8}	1	1	1	1	-4	1	8	9	10	6	-10	-11	1	-6	11	-55	-33	-26	20	26	29	-10	24	69	121
{0, 1, 2, 5, 6, 8}	1	1	1	-3	-4	1	1	5	10	6	-10	-27	1	29	11	-59	-50	28	58	22	-20	-32	-22	5	121
{0, 1, 2, 5, 6, 7, 8}	1	1	1	1	-4	1	1	1	1	6	1	1	1	-13	11	1	1	1	-18	6	1	1	1	1	-4
{0, 1, 2, 4, 8}	1	1	1	-3	1	1	8	-3	1	-9	1	-3	14	-20	-14	-3	35	1	-18	-33	50	23	1	-75	1
{0, 1, 2, 4, 7, 8}	1	1	1	1	1	1	8	9	10	1	-10	-11	14	22	1	-55	-67	-8	39	21	-34	-76	1	165	251
{0, 1, 2, 4, 6, 8}	1	1	1	-3	1	1	1	-3	1	1	1	-15	1	1	1	-3	1	1	1	-3	1	1	1	-15	1
{0, 1, 2, 4, 6, 7, 8}	1	1	1	1	1	1	1	1	1	1	1	-11	1	1	31	33	1	-17	-37	-19	1	1	1	-11	1
{0, 1, 2, 4, 5, 8}	1	1	1	-3	1	-5	1	5	10	1	1	-21	14	15	31	-27	-16	-32	39	17	43	-65	-45	-85	126
{0, 1, 2, 4, 5, 7, 8}	1	1	1	1	1	-5	1	1	1	1	1	-17	-25	-13	16	33	18	-23	-37	-19	22	45	24	-41	-99
{0, 1, 2, 4, 5, 6, 8}	1	1	1	-3	1	-5	-6	-3	1	1	12	-9	-25	-20	16	13	1	-5	-18	-43	-27	12	47	39	-24
{0, 1, 2, 4, 5, 6, 7, 8}	1	1	1	1	1	-5	-6	-7	-8	1	12	7	1	-20	-29	-23	1	22	39	21	-27	-76	-91	-49	51
{0, 1, 2, 3, 8}	1	1	1	1	-4	1	1	1	1	-4	1	13	1	-13	-4	1	18	1	-18	-4	1	23	1	-35	-4
{0, 1, 2, 3, 7, 8}	1	1	1	1	-4	1	1	1	1	6	1	1	-12	1	11	1	1	-17	1	6	1	1	1	1	-4
{0, 1, 2, 3, 6, 8}	1	1	1	1	-4	1	1	9	10	6	-10	-23	14	15	11	-23	-50	-8	20	66	22	-54	-91	-15	171
{0, 1, 2, 3, 6, 7, 8}	1	1	1	1	-4	1	1	1	1	6	1	1	1	-13	11	1	1	1	-18	6	1	1	1	1	-4
{0, 1, 2, 3, 5, 8}	1	1	1	1	-4	-5	1	9	10	-4	-10	-17	14	29	11	-23	-50	-14	58	76	1	-120	-114	39	221
{0, 1, 2, 3, 5, 7, 8}	1	1	1	1	-4	-5	1	1	1	6	12	-5	-12	-13	11	33	18	-23	-37	-14	22	34	24	-5	-29
{0, 1, 2, 3, 5, 6, 8}	1	1	1	1	-4	-5	-6	1	1	6	1	-17	-12	-6	11	17	1	-23	-37	-14	15	45	24	-41	-79

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 2, 3, 5, 6, 7, 8}	1	1	1	1	-4	-5	-6	-7	-8	-4	1	-5	-12	-20	-34	-23	-16	-14	-18	-44	-69	-87	-91	-85	-79
{0, 1, 2, 3, 4, 8}	1	1	1	1	1	-5	1	1	1	1	-10	-5	14	1	1	1	-16	-5	20	1	1	-10	-22	19	26
{0, 1, 2, 3, 4, 7, 8}	1	1	1	1	1	-5	1	1	1	11	1	-5	-12	1	1	17	1	-5	-18	-9	1	23	24	-5	-24
{0, 1, 2, 3, 4, 6, 8}	1	1	1	1	1	-5	-6	1	1	1	12	-5	-12	-6	1	1	18	13	-18	-19	-6	-10	24	43	1
{0, 1, 2, 3, 4, 6, 7, 8}	1	1	1	1	1	-5	-6	-7	-8	1	12	7	1	-20	-29	-23	1	22	39	21	-27	-76	-91	-49	51
{0, 1, 2, 3, 4, 5, 8}	1	1	1	1	1	1	-6	1	1	11	1	-11	1	-6	1	1	18	1	-18	-9	-6	23	1	13	1
{0, 1, 2, 3, 4, 5, 7, 8}	1	1	1	1	1	1	-6	-7	-8	1	12	13	1	-6	-14	-23	-16	10	39	41	15	-32	-68	-67	-24
{0, 1, 2, 3, 4, 5, 6, 8}	1	1	1	1	1	1	1	-7	-8	1	12	1	1	1	1	-7	-16	-8	20	21	1	-10	1	-7	-24
{0, 1, 2, 3, 4, 5, 6, 7, 8}	1	1	1	1	1	1	1	1	1	-9	1	1	1	1	1	1	1	1	1	-9	1	1	1	1	1
{0, 9}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
{0, 8, 9}	1	1	-2	1	1	4	1	1	-2	1	-10	4	14	1	-17	-47	1	76	-18	1	40	-32	1	76	-24
{0, 7, 9}	1	1	-2	-3	1	4	1	-3	-2	1	1	0	14	29	-2	-3	18	76	-18	37	-2	1	1	48	-24
{0, 7, 8, 9}	1	1	1	-3	-4	1	1	-3	1	-4	12	-3	-12	1	11	-3	1	1	20	-8	-20	-10	1	21	-29
{0, 6, 9}	1	1	1	-3	1	1	-6	-3	-8	1	-10	-27	14	-6	1	13	18	64	-18	37	-216	-54	1	-27	-24
{0, 6, 8, 9}	1	1	-2	-3	-4	4	1	-3	7	-4	1	-12	-38	1	-7	-19	-16	13	20	-28	-2	45	70	-12	-54
{0, 6, 7, 9}	1	1	-2	1	-4	4	-6	1	7	-4	12	-8	-12	8	-7	1	-33	31	20	-44	-9	-10	47	-32	-54
{0, 6, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	-10	1	1	-13	1	17	1	1	-18	1	22	-10	1	1	-24
{0, 5, 9}	1	1	-2	1	1	4	1	-7	-2	11	-10	4	1	1	-17	-7	18	76	-18	11	-2	-54	1	-4	
{0, 5, 8, 9}	1	1	-2	1	1	-2	8	-7	7	1	12	-2	-12	-6	28	-39	-16	7	20	21	-100	-32	93	-34	
{0, 5, 7, 9}	1	1	1	-3	1	1	1	-3	1	1	1	9	-12	1	16	29	-16	1	1	17	-20	1	1	9	
{0, 5, 7, 8, 9}	1	1	1	-3	-4	-5	8	-3	-8	-4	1	15	14	-20	-19	29	35	-14	-56	-28	92	89	-68	-153	
{0, 5, 6, 9}	1	1	-2	-3	1	4	8	-3	7	1	12	-12	-12	-6	-2	-19	-50	13	58	17	5	-10	70	36	
{0, 5, 6, 8, 9}	1	1	-2	-3	-4	-2	1	-3	-11	-14	-10	18	14	-13	-37	13	18	25	-56	-58	40	78	24	-102	
{0, 5, 6, 7, 9}	1	1	1	1	-4	1	8	1	-8	-14	1	25	14	-20	-19	33	52	-8	-75	-34	92	111	-68	-191	
{0, 5, 6, 7, 8, 9}	1	1	1	1	1	-5	1	1	1	1	1	-5	14	1	-14	1	1	-5	20	1	-20	1	1	-5	
{0, 4, 9}	1	1	-2	1	1	4	1	-7	-2	11	-10	4	1	1	-17	-7	18	76	-18	11	-2	-54	1	-4	
{0, 4, 8, 9}	1	1	1	1	1	1	8	-7	1	1	12	1	1	-20	16	-23	1	1	1	1	-13	-32	24	17	
{0, 4, 7, 9}	1	1	-2	-3	1	-2	1	-3	7	1	12	-6	-12	1	28	13	-33	7	58	-23	-86	12	70	-6	
{0, 4, 7, 8, 9}	1	1	1	-3	-4	-5	8	-3	-8	-14	1	-9	14	-6	-19	13	18	-14	1	-38	-13	45	1	-57	
{0, 4, 6, 9}	1	1	-2	-3	1	4	1	-3	7	1	1	-12	-12	1	-2	-19	-50	31	39	-3	-2	45	47	-36	
{0, 4, 6, 8, 9}	1	1	1	-3	-4	1	1	-3	-8	-4	-10	-3	1	-13	-49	13	35	-8	-56	-48	1	-10	-68	-99	
{0, 4, 6, 7, 9}	1	1	-2	1	-4	-2	1	9	-11	-14	-10	10	27	-27	-37	-7	18	43	-37	-74	-2	78	47	-54	
{0, 4, 6, 7, 8, 9}	1	1	1	1	1	-5	1	9	1	1	-10	-17	1	29	1	-23	-16	-23	39	61	1	-76	-45	-9	
{0, 4, 5, 9}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-16	1	-18	1	1	1	1	1	
{0, 4, 5, 8, 9}	1	1	1	1	1	-5	1	1	1	1	-10	-17	1	15	-14	1	1	-5	1	1	1	-10	-22	-17	
{0, 4, 5, 7, 9}	1	1	1	-3	1	-5	1	5	-8	-9	-10	3	1	-13	-44	-11	18	-14	-18	-53	-20	-10	24	-85	
{0, 4, 5, 7, 8, 9}	1	1	1	-3	-4	1	1	5	1	6	-10	-3	1	29	-4	-11	-33	1	39	22	-20	-76	1	29	
{0, 4, 5, 6, 9}	1	1	1	-3	1	1	1	5	-8	1	-10	21	14	1	-14	21	1	-8	-18	-43	1	12	24	-43	
{0, 4, 5, 6, 8, 9}	1	1	1	-3	-4	-5	-6	5	1	-4	-21	-21	1	8	-19	-43	-33	-23	1	-8	-69	-87	-91	-37	
{0, 4, 5, 6, 7, 9}	1	1	1	1	-4	-5	1	1	1	6	-10	-17	1	1	11	1	-33	-5	1	26	22	-54	-45	7	
{0, 4, 5, 6, 7, 8, 9}	1	1	1	1	1	1	-6	1	1	1	1	-11	1	8	1	1	1	1	-18	1	15	1	1	-11	

	Size of input, n:																							
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 3, 9}	1	1	1	-3	1	1	-6	-3	-8	1	-10	-27	14	-6	1	13	18	64	-18	37	-216	-54	1	-27	
{0, 3, 8, 9}	1	1	-2	-3	1	4	1	-3	7	1	12	-12	-12	1	-2	-3	-16	31	20	-23	-2	12	93	-12	
{0, 3, 7, 9}	1	1	-2	-3	-4	4	-6	-3	7	-4	12	-12	1	8	-7	-3	-50	13	58	-28	-9	-10	47	-36	
{0, 3, 7, 8, 9}	1	1	1	-3	-4	1	1	-3	-8	-14	-10	21	27	-27	-49	13	52	-8	-113	-18	85	144	-68	-195	
{0, 3, 6, 9}	1	1	1	1	-4	1	1	1	1	-4	1	1	1	1	-64	1	1	1	1	-4	1	1	1	1	
{0, 3, 6, 8, 9}	1	1	-2	1	-4	4	1	1	-2	-14	1	4	1	15	-7	1	1	4	-18	-34	-2	1	1	28	
{0, 3, 6, 7, 9}	1	1	-2	1	1	4	1	9	-2	1	1	4	14	1	-2	-7	18	4	1	1	-23	23	-22	12	
{0, 3, 6, 7, 8, 9}	1	1	1	1	1	1	1	9	1	1	-10	1	1	1	1	-7	1	-17	20	1	1	-10	1	9	
{0, 3, 5, 9}	1	1	-2	-3	1	4	1	-3	7	1	1	-12	-12	1	-2	-19	-50	31	39	-3	-2	45	47	-36	
{0, 3, 5, 8, 9}	1	1	-2	-3	1	-2	1	-3	-11	-9	-10	18	1	1	-47	13	35	-11	-37	-13	19	34	1	-78	
{0, 3, 5, 7, 9}	1	1	1	-3	-4	1	1	-3	1	-4	1	-3	14	15	-19	-3	18	1	-18	-8	22	1	-22	-3	
{0, 3, 5, 7, 8, 9}	1	1	1	-3	-4	-5	1	-3	1	6	-10	-21	1	29	11	-35	-16	13	39	2	-20	-10	1	-21	
{0, 3, 5, 6, 9}	1	1	-2	1	-4	4	1	1	-2	-4	-10	4	14	1	-7	1	18	4	-18	-4	-23	-10	1	4	
{0, 3, 5, 6, 8, 9}	1	1	-2	1	-4	-2	-6	1	7	6	1	-2	1	8	23	1	-16	7	1	6	-9	1	-22	-50	
{0, 3, 5, 6, 7, 9}	1	1	1	1	1	1	1	1	1	1	-10	1	14	43	1	1	-16	-17	1	1	1	-10	1	25	
{0, 3, 5, 6, 7, 8, 9}	1	1	1	1	1	-5	-6	1	10	11	1	-5	-25	-6	16	33	18	-14	-56	-49	15	89	93	-5	
{0, 3, 4, 9}	1	1	-2	-3	1	4	8	-3	7	1	12	-12	-12	-6	-2	-19	-50	13	58	17	5	-10	70	36	
{0, 3, 4, 8, 9}	1	1	1	-3	1	1	1	-3	1	1	1	-3	14	1	-14	-19	35	19	-37	-23	1	1	1	-3	
{0, 3, 4, 7, 9}	1	1	-2	-3	-4	-2	8	5	-11	-4	1	18	1	-20	-37	21	18	-11	-37	-28	47	45	-22	-46	
{0, 3, 4, 7, 8, 9}	1	1	1	-3	-4	-5	1	5	1	-4	-10	3	-12	29	-19	5	-50	31	1	32	-41	-10	-22	11	
{0, 3, 4, 6, 9}	1	1	-2	1	-4	4	1	1	-2	-4	-10	4	14	1	-7	1	18	4	-18	-4	-23	-10	1	4	
{0, 3, 4, 6, 8, 9}	1	1	1	1	-4	1	-6	1	1	6	1	1	1	8	-4	-63	-16	19	20	26	-27	-21	-45	1	
{0, 3, 4, 6, 7, 9}	1	1	-2	1	1	-2	1	1	7	1	-10	-2	-12	15	13	1	1	7	1	21	-2	-10	-22	-50	
{0, 3, 4, 6, 7, 8, 9}	1	1	1	1	1	-5	-6	1	10	11	12	-5	-38	-6	16	49	35	-14	-75	-89	-6	122	162	67	
{0, 3, 4, 5, 9}	1	1	1	-3	1	1	1	5	-8	1	-10	21	14	1	-14	21	1	-8	-18	-43	1	12	24	-43	
{0, 3, 4, 5, 8, 9}	1	1	1	-3	1	-5	-6	5	1	1	-10	3	-12	8	1	-11	1	-23	20	-3	-6	-10	24	-13	
{0, 3, 4, 5, 7, 9}	1	1	1	-3	-4	-5	1	-3	1	6	1	-21	1	15	11	-19	-33	-23	20	2	1	-43	-45	-45	
{0, 3, 4, 5, 7, 8, 9}	1	1	1	-3	-4	1	-6	-3	1	6	12	-15	-12	-6	26	13	1	1	-18	2	-6	34	47	9	
{0, 3, 4, 5, 6, 9}	1	1	1	1	-4	1	-6	1	1	-4	-10	1	1	-6	-19	1	1	1	1	-4	-6	-10	1	1	
{0, 3, 4, 5, 6, 8, 9}	1	1	1	1	-4	-5	1	1	10	6	1	-5	-12	29	26	1	-16	-14	1	26	22	1	-45	-53	
{0, 3, 4, 5, 6, 7, 9}	1	1	1	1	1	-5	-6	-7	10	11	12	-5	-12	-6	1	9	35	4	-18	-49	-27	12	70	35	
{0, 3, 4, 5, 6, 7, 8, 9}	1	1	1	1	1	1	1	-7	1	1	12	1	-12	1	1	-7	1	1	20	1	-20	-10	1	17	
{0, 2, 9}	1	1	-2	-3	1	4	1	-3	-2	1	1	0	14	29	-2	-3	18	76	-18	37	-2	1	1	48	
{0, 2, 8, 9}	1	1	-2	-3	-4	4	1	-3	7	-4	12	-12	-12	1	-7	-3	-16	13	58	-28	-86	-54	139	84	
{0, 2, 7, 9}	1	1	1	1	1	1	1	1	1	1	1	1	-12	1	1	1	1	1	-18	1	1	1	-45	1	
{0, 2, 7, 8, 9}	1	1	1	1	-4	1	1	1	-8	-4	1	13	14	-13	-19	17	35	-8	-18	-24	1	67	1	-59	
{0, 2, 6, 9}	1	1	-2	-3	-4	4	-6	-3	7	-4	12	-12	1	8	-7	-3	-50	13	58	-28	-9	-10	47	-36	
{0, 2, 6, 8, 9}	1	1	-2	-3	1	4	1	-3	-11	-9	-10	-12	1	1	-2	-19	1	67	-56	-133	-2	78	1	-108	
{0, 2, 6, 7, 9}	1	1	1	1	-4	1	-6	1	-8	-14	-10	1	1	8	-34	1	18	10	-56	-74	-6	-10	1	-47	
{0, 2, 6, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	-10	-23	-12	15	16	17	-33	-17	20	21	22	-10	-45	-71	
{0, 2, 5, 9}	1	1	-2	-3	1	-2	1	-3	7	1	12	-6	-12	1	28	13	-33	7	58	-23	-86	12	70	-6	

	Size of input, n:																							
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 2, 5, 8, 9}	1	1	-2	-3	-4	-2	8	-3	-2	-14	1	18	14	-6	-37	-3	69	-38	-113	-18	47	45	-22	-174	
{0, 2, 5, 7, 9}	1	1	1	1	1	-5	1	9	1	1	1	-5	14	15	-14	-23	1	-5	20	1	-20	1	24	3	
{0, 2, 5, 7, 8, 9}	1	1	1	1	-4	-5	8	9	1	-4	-10	-5	14	22	-19	-23	-16	13	39	16	-55	-54	47	75	
{0, 2, 5, 6, 9}	1	1	-2	-3	-4	-2	8	5	-11	-4	1	18	1	-20	-37	21	18	-11	-37	-28	47	45	-22	-46	
{0, 2, 5, 6, 8, 9}	1	1	-2	-3	1	-2	1	5	7	1	-10	-30	1	43	-2	-59	-33	7	58	17	-23	-54	-68	-22	
{0, 2, 5, 6, 7, 9}	1	1	1	1	-4	-5	8	1	1	6	1	-5	1	-6	11	1	-50	-41	1	46	71	-65	-160	-5	
{0, 2, 5, 6, 7, 8, 9}	1	1	1	1	1	-5	1	1	10	11	12	-17	-25	1	16	17	18	-32	-56	-29	22	78	93	-17	
{0, 2, 4, 9}	1	1	1	-3	1	1	1	-3	1	1	1	9	-12	1	16	29	-16	1	1	17	-20	1	1	9	
{0, 2, 4, 8, 9}	1	1	1	-3	-4	1	8	-3	-8	-4	-10	-3	1	-20	-19	-3	18	-8	-75	-48	8	-10	-45	-75	
{0, 2, 4, 7, 9}	1	1	1	1	1	-5	1	9	1	1	1	-5	14	15	-14	-23	1	-5	20	1	-20	1	24	3	
{0, 2, 4, 7, 8, 9}	1	1	1	1	-4	-5	8	9	1	6	1	-5	14	22	-4	-23	-33	13	39	6	-34	-43	1	75	
{0, 2, 4, 6, 9}	1	1	1	-3	-4	1	1	-3	1	-4	1	-3	14	15	-19	-3	18	1	-18	-8	22	1	-22	-3	
{0, 2, 4, 6, 8, 9}	1	1	1	-3	1	1	1	-3	1	1	1	-15	-12	1	16	-3	-16	1	20	-3	-20	1	24	-15	
{0, 2, 4, 6, 7, 9}	1	1	1	1	-4	-5	1	1	1	-4	1	-5	-12	1	-4	1	1	-5	1	-4	1	1	1	-5	
{0, 2, 4, 6, 7, 8, 9}	1	1	1	1	1	-5	1	1	1	1	1	-5	-12	1	1	1	18	-5	-18	1	1	1	24	-5	
{0, 2, 4, 5, 9}	1	1	1	-3	1	-5	1	5	-8	-9	-10	3	1	-13	-44	-11	18	-14	-18	-53	-20	-10	24	-85	
{0, 2, 4, 5, 8, 9}	1	1	1	-3	-4	-5	1	5	1	6	-10	-21	14	29	11	-59	-33	31	58	-18	-62	-54	-22	35	
{0, 2, 4, 5, 7, 9}	1	1	1	1	1	1	1	1	1	1	1	1	-12	1	1	1	1	1	-18	1	1	1	1	1	
{0, 2, 4, 5, 7, 8, 9}	1	1	1	1	-4	1	1	1	10	6	1	-11	-25	15	26	17	-16	-44	-18	26	43	45	-22	-83	
{0, 2, 4, 5, 6, 9}	1	1	1	-3	-4	-5	1	-3	1	6	1	-21	1	15	11	-19	-33	-23	20	2	1	-43	-45	-45	
{0, 2, 4, 5, 6, 8, 9}	1	1	1	-3	1	-5	-6	-3	10	1	1	-9	-12	-20	16	13	18	-32	-18	-23	15	1	70	-9	
{0, 2, 4, 5, 6, 7, 9}	1	1	1	1	-4	1	1	-7	1	6	1	1	-25	1	11	-7	1	1	1	6	-20	1	24	-7	
{0, 2, 4, 5, 6, 7, 8, 9}	1	1	1	1	1	1	-6	-7	1	1	1	13	1	-6	-14	-7	1	1	20	21	-6	-21	-22	-19	
{0, 2, 3, 9}	1	1	-2	1	-4	4	-6	1	7	-4	12	-8	-12	8	-7	1	-33	31	20	-44	-9	-10	47	-32	
{0, 2, 3, 8, 9}	1	1	-2	1	-4	4	1	1	-11	-14	1	4	14	1	-7	17	18	13	-56	-74	19	45	1	-20	
{0, 2, 3, 7, 9}	1	1	1	1	-4	1	-6	1	-8	-14	-10	1	1	8	-34	1	18	10	-56	-74	-6	-10	1	-47	
{0, 2, 3, 7, 8, 9}	1	1	1	1	-4	1	1	1	1	6	-10	-11	-12	15	26	-15	-50	19	58	-14	-20	-10	1	13	
{0, 2, 3, 6, 9}	1	1	-2	1	1	4	1	9	-2	1	1	4	14	1	-2	-7	18	4	1	1	-23	23	-22	12	
{0, 2, 3, 6, 8, 9}	1	1	-2	1	1	4	1	9	7	1	1	4	1	1	13	-23	-50	-41	20	21	-2	1	-22	36	
{0, 2, 3, 6, 7, 9}	1	1	1	1	1	1	1	1	1	1	-10	1	1	29	-44	1	-50	37	-18	41	-41	-10	-22	1	
{0, 2, 3, 6, 7, 8, 9}	1	1	1	1	1	1	1	1	10	11	12	1	-25	-13	16	33	1	-44	-56	-29	-20	34	70	49	
{0, 2, 3, 5, 9}	1	1	-2	1	-4	-2	1	9	-11	-14	-10	10	27	-27	-37	-7	18	43	-37	-74	-2	78	47	-54	
{0, 2, 3, 5, 8, 9}	1	1	-2	1	-4	-2	1	9	7	6	1	-26	1	29	-7	-55	-50	25	39	-14	-23	-43	1	6	
{0, 2, 3, 5, 7, 9}	1	1	1	1	-4	-5	1	1	1	-4	1	-5	-12	1	-4	1	1	-5	1	-4	1	1	1	-5	
{0, 2, 3, 5, 7, 8, 9}	1	1	1	1	-4	-5	1	1	10	6	1	-5	-38	1	41	33	-16	-68	-37	46	64	45	-22	-77	
{0, 2, 3, 5, 6, 9}	1	1	-2	1	1	-2	1	1	7	1	-10	-2	-12	15	13	1	1	7	1	21	-2	-10	-22	-50	
{0, 2, 3, 5, 6, 8, 9}	1	1	-2	1	1	-2	-6	1	-2	1	1	10	-25	-20	13	1	1	-2	1	-19	-9	1	1	10	
{0, 2, 3, 5, 6, 7, 9}	1	1	1	1	1	-5	1	-7	10	1	1	-5	-12	-13	16	-7	18	-14	1	-19	22	-21	47	-37	
{0, 2, 3, 5, 6, 7, 8, 9}	1	1	1	1	1	-5	-6	-7	1	1	12	7	-12	-20	-14	-7	18	31	20	-19	-48	-54	-22	47	
{0, 2, 3, 4, 9}	1	1	1	1	-4	1	8	1	-8	-14	1	25	14	-20	-19	33	52	-8	-75	-34	92	111	-68	-191	
{0, 2, 3, 4, 8, 9}	1	1	1	1	-4	1	1	1	1	-4	-10	-11	14	15	11	-47	-33	19	39	16	-41	-76	1	61	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 2, 3, 4, 7, 9}	1	1	1	1	-4	-5	8	1	1	6	1	-5	1	-6	11	1	-50	-41	1	46	71	-65	-160	-5	
{0, 2, 3, 4, 7, 8, 9}	1	1	1	1	-4	-5	1	1	1	6	1	-5	-12	-13	26	33	-33	-59	-37	26	64	1	-68	-53	
{0, 2, 3, 4, 6, 9}	1	1	1	1	1	1	1	1	1	1	-10	1	14	43	1	1	-16	-17	1	1	1	-10	1	25	
{0, 2, 3, 4, 6, 8, 9}	1	1	1	1	1	1	-6	1	10	1	1	1	-25	-6	16	33	-16	-26	1	1	15	23	24	-23	
{0, 2, 3, 4, 6, 7, 9}	1	1	1	1	1	-5	1	-7	10	1	1	-5	-12	-13	16	-7	18	-14	1	-19	22	-21	47	-37	
{0, 2, 3, 4, 6, 7, 8, 9}	1	1	1	1	1	-5	-6	-7	1	1	12	19	-12	-34	-29	-7	35	49	39	-19	-90	-98	-45	59	
{0, 2, 3, 4, 5, 9}	1	1	1	1	-4	-5	1	1	1	6	-10	-17	1	1	11	1	-33	-5	1	26	22	-54	-45	7	
{0, 2, 3, 4, 5, 8, 9}	1	1	1	1	-4	-5	-6	1	10	6	12	-17	-25	-6	26	33	1	-32	-75	-34	36	78	93	-65	
{0, 2, 3, 4, 5, 7, 9}	1	1	1	1	-4	1	1	-7	1	6	1	1	-25	1	11	-7	1	1	1	6	-20	1	24	-7	
{0, 2, 3, 4, 5, 7, 8, 9}	1	1	1	1	-4	1	-6	-7	1	-4	12	13	-12	-20	-34	9	18	19	20	-24	-27	-54	-45	29	
{0, 2, 3, 4, 5, 6, 9}	1	1	1	1	1	-5	-6	-7	10	11	12	-5	-12	-6	1	9	35	4	-18	-49	-27	12	70	35	
{0, 2, 3, 4, 5, 6, 8, 9}	1	1	1	1	1	-5	1	-7	1	1	12	7	-12	-27	1	-7	18	13	20	-19	-20	-54	1	23	
{0, 2, 3, 4, 5, 6, 7, 9}	1	1	1	1	1	1	-6	1	1	1	1	1	-12	-6	1	1	1	1	1	1	-6	1	1	1	
{0, 2, 3, 4, 5, 6, 7, 8, 9}	1	1	1	1	1	1	1	1	-8	-9	1	13	1	1	1	1	1	-8	-18	-9	22	23	1	-11	
{0, 1, 9}	1	1	-2	1	1	4	1	1	-2	1	-10	4	14	1	-17	-47	1	76	-18	1	40	-32	1	76	
{0, 1, 8, 9}	1	1	1	1	-4	1	1	1	1	-4	1	1	1	1	-4	1	1	1	1	-4	1	1	-45	1	
{0, 1, 7, 9}	1	1	-2	-3	-4	4	1	-3	7	-4	12	-12	-12	1	-7	-3	-16	13	58	-28	-86	-54	139	84	
{0, 1, 7, 8, 9}	1	1	1	-3	1	1	1	-3	1	1	-10	9	14	15	1	-3	-16	19	1	-3	-20	12	24	9	
{0, 1, 6, 9}	1	1	-2	-3	1	4	1	-3	7	1	12	-12	-12	1	-2	-3	-16	31	20	-23	-2	12	93	-12	
{0, 1, 6, 8, 9}	1	1	1	-3	-4	1	1	-3	-8	-4	-10	21	1	1	-19	-19	18	10	-37	-28	22	78	24	-147	
{0, 1, 6, 7, 9}	1	1	-2	1	-4	4	1	1	-11	-14	1	4	14	1	-7	17	18	13	-56	-74	19	45	1	-20	
{0, 1, 6, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	-10	-11	-12	1	16	17	-16	-17	1	21	22	-10	-22	-35	
{0, 1, 5, 9}	1	1	1	1	1	1	8	-7	1	1	12	1	1	-20	16	-23	1	1	1	1	-13	-32	24	17	
{0, 1, 5, 8, 9}	1	1	1	1	-4	-5	8	-7	-8	-14	-10	-17	14	-20	-4	9	1	-14	1	-114	-13	-10	-22	-1	
{0, 1, 5, 7, 9}	1	1	1	-3	-4	1	8	-3	-8	-4	-10	-3	1	-20	-19	-3	18	-8	-75	-48	8	-10	-45	-75	
{0, 1, 5, 7, 8, 9}	1	1	1	-3	1	-5	8	-3	1	1	-10	-21	14	-6	1	-19	-16	-5	39	-23	-13	-54	-45	3	
{0, 1, 5, 6, 9}	1	1	1	-3	1	1	1	-3	1	1	1	-3	14	1	-14	-19	35	19	-37	-23	1	1	1	-3	
{0, 1, 5, 6, 8, 9}	1	1	1	-3	-4	-5	1	-3	1	6	-10	3	1	15	11	13	-33	13	20	42	22	-32	-22	3	
{0, 1, 5, 6, 7, 9}	1	1	1	1	-4	1	1	1	1	-4	-10	-11	14	15	11	-47	-33	19	39	16	-41	-76	1	61	
{0, 1, 5, 6, 7, 8, 9}	1	1	1	1	1	-5	1	1	1	1	12	-5	1	-13	1	1	18	-5	1	-19	1	-10	24	-5	
{0, 1, 4, 9}	1	1	-2	1	1	-2	8	-7	7	1	12	-2	-12	-6	28	-39	-16	7	20	21	-100	-32	93	-34	
{0, 1, 4, 8, 9}	1	1	1	1	-4	-5	8	-7	-8	-14	-10	-17	14	-20	-4	9	1	-14	1	-114	-13	-10	-22	-1	
{0, 1, 4, 7, 9}	1	1	-2	-3	-4	-2	8	-3	-2	-14	1	18	14	-6	-37	-3	69	-38	-113	-18	47	45	-22	-174	
{0, 1, 4, 7, 8, 9}	1	1	1	-3	1	-5	8	-3	1	1	1	3	14	22	-14	-3	-16	31	39	17	-76	23	1	3	
{0, 1, 4, 6, 9}	1	1	-2	-3	1	-2	1	-3	-11	-9	-10	18	1	1	-47	13	35	-11	-37	-13	19	34	1	-78	
{0, 1, 4, 6, 8, 9}	1	1	1	-3	-4	-5	1	-3	1	6	-10	-21	1	29	11	-35	-16	31	96	22	-62	-76	1	51	
{0, 1, 4, 6, 7, 9}	1	1	-2	1	-4	-2	1	9	7	6	1	-26	1	29	-7	-55	-50	25	39	-14	-23	-43	1	6	
{0, 1, 4, 6, 7, 8, 9}	1	1	1	1	1	-5	1	9	10	11	12	-17	-25	15	31	25	1	-86	-94	11	85	78	24	-153	
{0, 1, 4, 5, 9}	1	1	1	1	1	-5	1	1	1	1	-10	-17	1	15	-14	1	1	-5	1	1	1	-10	-22	-17	
{0, 1, 4, 5, 8, 9}	1	1	1	1	-4	1	1	1	1	-4	1	1	1	1	-4	1	-33	1	1	-4	1	1	1	1	
{0, 1, 4, 5, 7, 9}	1	1	1	-3	-4	-5	1	5	1	6	-10	-21	14	29	11	-59	-33	31	58	-18	-62	-54	-22	35	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 4, 5, 7, 8, 9}	1	1	1	-3	1	1	1	5	10	11	1	-3	1	1	16	5	-16	-26	-18	-13	1	1	-22	-43	
{0, 1, 4, 5, 6, 9}	1	1	1	-3	1	-5	-6	5	1	1	-10	3	-12	8	1	-11	1	-23	20	-3	-6	-10	24	-13	
{0, 1, 4, 5, 6, 8, 9}	1	1	1	-3	-4	1	-6	5	1	6	1	-3	1	-6	26	5	1	-17	1	2	-6	23	-22	5	
{0, 1, 4, 5, 6, 7, 9}	1	1	1	1	-4	-5	-6	1	10	6	12	-17	-25	-6	26	33	1	-32	-75	-34	36	78	93	-65	
{0, 1, 4, 5, 6, 7, 8, 9}	1	1	1	1	1	1	-6	1	1	1	12	1	1	-20	1	1	1	19	1	1	-27	-10	1	1	
{0, 1, 3, 9}	1	1	-2	-3	-4	4	1	-3	7	-4	1	-12	-38	1	-7	-19	-16	13	20	-28	-2	45	70	-12	
{0, 1, 3, 8, 9}	1	1	1	-3	-4	1	1	-3	-8	-4	-10	21	1	1	-19	-19	18	10	-37	-28	22	78	24	-147	
{0, 1, 3, 7, 9}	1	1	-2	-3	1	4	1	-3	-11	-9	-10	-12	1	1	-2	-19	1	67	-56	-133	-2	78	1	-108	
{0, 1, 3, 7, 8, 9}	1	1	1	-3	1	1	1	-3	1	1	-21	-27	-12	1	16	13	-33	-17	39	17	-41	-153	-114	-51	
{0, 1, 3, 6, 9}	1	1	-2	1	-4	4	1	1	-2	-14	1	4	1	15	-7	1	1	4	-18	-34	-2	1	1	28	
{0, 1, 3, 6, 8, 9}	1	1	1	1	-4	1	1	1	1	-4	1	1	-12	1	-19	1	1	37	39	-4	1	1	-22	-47	
{0, 1, 3, 6, 7, 9}	1	1	-2	1	1	4	1	9	7	1	1	4	1	1	13	-23	-50	-41	20	21	-2	1	-22	36	
{0, 1, 3, 6, 7, 8, 9}	1	1	1	1	1	1	1	9	10	11	1	1	-12	1	1	9	-16	-62	-37	-29	22	23	24	-15	
{0, 1, 3, 5, 9}	1	1	1	-3	-4	1	1	-3	-8	-4	-10	-3	1	-13	-49	13	35	-8	-56	-48	1	-10	-68	-99	
{0, 1, 3, 5, 8, 9}	1	1	1	-3	-4	-5	1	-3	1	6	-10	-21	1	29	11	-35	-16	31	96	22	-62	-76	1	51	
{0, 1, 3, 5, 7, 9}	1	1	1	-3	1	1	1	-3	1	1	1	-15	-12	1	16	-3	-16	1	20	-3	-20	1	24	-15	
{0, 1, 3, 5, 7, 8, 9}	1	1	1	-3	1	-5	1	-3	1	1	1	-9	-12	-13	16	29	1	-95	-18	57	43	-43	-45	-57	
{0, 1, 3, 5, 6, 9}	1	1	1	1	-4	1	-6	1	1	6	1	1	1	8	-4	-63	-16	19	20	26	-27	-21	-45	1	
{0, 1, 3, 5, 6, 8, 9}	1	1	1	1	-4	-5	-6	1	10	6	1	-5	-25	-6	41	49	1	-50	-37	6	57	67	1	-77	
{0, 1, 3, 5, 6, 7, 9}	1	1	1	1	1	1	-6	1	10	1	1	1	-25	-6	16	33	-16	-26	1	1	15	23	24	-23	
{0, 1, 3, 5, 6, 7, 8, 9}	1	1	1	1	1	-5	-6	1	1	1	12	19	-12	-20	-14	1	18	49	20	-39	-48	-32	-22	43	
{0, 1, 3, 4, 9}	1	1	-2	-3	-4	-2	1	-3	-11	-14	-10	18	14	-13	-37	13	18	25	-56	-58	40	78	24	-102	
{0, 1, 3, 4, 8, 9}	1	1	1	-3	-4	-5	1	-3	1	6	-10	3	1	15	11	13	-33	13	20	42	22	-32	-22	3	
{0, 1, 3, 4, 7, 9}	1	1	-2	-3	1	-2	1	5	7	1	-10	-30	1	43	-2	-59	-33	7	58	17	-23	-54	-68	-22	
{0, 1, 3, 4, 7, 8, 9}	1	1	1	-3	1	-5	1	5	10	11	1	-21	-12	1	16	21	-16	-68	-18	27	43	23	-22	-109	
{0, 1, 3, 4, 6, 9}	1	1	-2	1	-4	-2	-6	1	7	6	1	-2	1	8	23	1	-16	7	1	6	-9	1	-22	-50	
{0, 1, 3, 4, 6, 8, 9}	1	1	1	1	-4	-5	-6	1	10	6	1	-5	-25	-6	41	49	1	-50	-37	6	57	67	1	-77	
{0, 1, 3, 4, 6, 7, 9}	1	1	-2	1	1	-2	-6	1	-2	1	1	10	-25	-20	13	1	1	-2	1	-19	-9	1	1	10	
{0, 1, 3, 4, 6, 7, 8, 9}	1	1	1	1	1	-5	-6	1	1	1	1	7	-12	-20	-14	1	18	31	1	-39	-48	-21	24	55	
{0, 1, 3, 4, 5, 9}	1	1	1	-3	-4	-5	-6	5	1	-4	-21	-21	1	8	-19	-43	-33	-23	1	-8	-69	-87	-91	-37	
{0, 1, 3, 4, 5, 8, 9}	1	1	1	-3	-4	1	-6	5	1	6	1	-3	1	-6	26	5	1	-17	1	2	-6	23	-22	5	
{0, 1, 3, 4, 5, 7, 9}	1	1	1	-3	1	-5	-6	-3	10	1	1	-9	-12	-20	16	13	18	-32	-18	-23	15	1	70	-9	
{0, 1, 3, 4, 5, 7, 8, 9}	1	1	1	-3	1	1	-6	-3	1	1	1	9	1	-34	-29	-3	18	1	1	-3	-27	-43	-22	9	
{0, 1, 3, 4, 5, 6, 9}	1	1	1	1	-4	-5	1	1	10	6	1	-5	-12	29	26	1	-16	-14	1	26	22	1	-45	-53	
{0, 1, 3, 4, 5, 6, 8, 9}	1	1	1	1	-4	1	1	1	1	-4	1	1	-12	-27	-19	1	1	1	1	-4	1	1	1	1	
{0, 1, 3, 4, 5, 6, 7, 9}	1	1	1	1	1	-5	1	-7	1	1	12	7	-12	-27	1	-7	18	13	20	-19	-20	-54	1	23	
{0, 1, 3, 4, 5, 6, 7, 8, 9}	1	1	1	1	1	1	1	-7	-8	-9	1	13	14	1	1	-7	-16	-26	-18	11	43	45	24	-19	
{0, 1, 2, 9}	1	1	1	-3	-4	1	1	-3	1	-4	12	-3	-12	1	11	-3	1	1	20	-8	-20	-10	1	21	
{0, 1, 2, 8, 9}	1	1	1	-3	1	1	1	-3	1	1	-10	9	14	15	1	-3	-16	19	1	-3	-20	12	24	9	
{0, 1, 2, 7, 9}	1	1	1	1	-4	1	1	1	-8	-4	1	13	14	-13	-19	17	35	-8	-18	-24	1	67	1	-59	
{0, 1, 2, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	-10	1	1	1	1	1	1	1	-18	1	1	-10	1	1	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 2, 6, 9}	1	1	1	-3	-4	1	1	-3	-8	-14	-10	21	27	-27	-49	13	52	-8	-113	-18	85	144	-68	-195	
{0, 1, 2, 6, 8, 9}	1	1	1	-3	1	1	1	-3	1	1	-21	-27	-12	1	16	13	-33	-17	39	17	-41	-153	-114	-51	
{0, 1, 2, 6, 7, 9}	1	1	1	1	-4	1	1	1	1	6	-10	-11	-12	15	26	-15	-50	19	58	-14	-20	-10	1	13	
{0, 1, 2, 6, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-14	17	1	1	1	-19	1	1	1	1	
{0, 1, 2, 5, 9}	1	1	1	-3	-4	-5	8	-3	-8	-14	1	-9	14	-6	-19	13	18	-14	1	-38	-13	45	1	-57	
{0, 1, 2, 5, 8, 9}	1	1	1	-3	1	-5	8	-3	1	1	1	3	14	22	-14	-3	-16	31	39	17	-76	23	1	3	
{0, 1, 2, 5, 7, 9}	1	1	1	1	-4	-5	8	9	1	6	1	-5	14	22	-4	-23	-33	13	39	6	-34	-43	1	75	
{0, 1, 2, 5, 7, 8, 9}	1	1	1	1	1	-5	8	9	10	11	12	-5	1	8	1	9	-16	-68	-94	-69	-55	-10	1	-45	
{0, 1, 2, 5, 6, 9}	1	1	1	-3	-4	-5	1	5	1	-4	-10	3	-12	29	-19	5	-50	31	1	32	-41	-10	-22	11	
{0, 1, 2, 5, 6, 8, 9}	1	1	1	-3	1	-5	1	5	10	11	1	-21	-12	1	16	21	-16	-68	-18	27	43	23	-22	-109	
{0, 1, 2, 5, 6, 7, 9}	1	1	1	1	-4	-5	1	1	1	6	1	-5	-12	-13	26	33	-33	-59	-37	26	64	1	-68	-53	
{0, 1, 2, 5, 6, 7, 8, 9}	1	1	1	1	1	-5	1	1	1	1	12	-5	1	1	-14	1	18	-5	1	1	-20	-10	24	-5	
{0, 1, 2, 4, 9}	1	1	1	-3	-4	-5	8	-3	-8	-4	1	15	14	-20	-19	29	35	-14	-56	-28	92	89	-68	-153	
{0, 1, 2, 4, 8, 9}	1	1	1	-3	1	-5	8	-3	1	1	-10	-21	14	-6	1	-19	-16	-5	39	-23	-13	-54	-45	3	
{0, 1, 2, 4, 7, 9}	1	1	1	1	-4	-5	8	9	1	-4	-10	-5	14	22	-19	-23	-16	13	39	16	-55	-54	47	75	
{0, 1, 2, 4, 7, 8, 9}	1	1	1	1	1	-5	8	9	10	11	12	-5	1	8	1	9	-16	-68	-94	-69	-55	-10	1	-45	
{0, 1, 2, 4, 6, 9}	1	1	1	-3	-4	-5	1	-3	1	6	-10	-21	1	29	11	-35	-16	13	39	2	-20	-10	1	-21	
{0, 1, 2, 4, 6, 8, 9}	1	1	1	-3	1	-5	1	-3	1	1	1	-9	-12	-13	16	29	1	-95	-18	57	43	-43	-45	-57	
{0, 1, 2, 4, 6, 7, 9}	1	1	1	1	-4	-5	1	1	10	6	1	-5	-38	1	41	33	-16	-68	-37	46	64	45	-22	-77	
{0, 1, 2, 4, 6, 7, 8, 9}	1	1	1	1	1	-5	1	1	1	1	12	7	-12	1	-14	1	52	13	-18	-19	-41	-10	47	31	
{0, 1, 2, 4, 5, 9}	1	1	1	-3	-4	1	1	5	1	6	-10	-3	1	29	-4	-11	-33	1	39	22	-20	-76	1	29	
{0, 1, 2, 4, 5, 8, 9}	1	1	1	-3	1	1	1	5	10	11	1	-3	1	1	16	5	-16	-26	-18	-13	1	1	-22	-43	
{0, 1, 2, 4, 5, 7, 9}	1	1	1	1	-4	1	1	1	10	6	1	-11	-25	15	26	17	-16	-44	-18	26	43	45	-22	-83	
{0, 1, 2, 4, 5, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	1	1	-12	-27	-14	33	69	73	20	-39	-62	-43	-22	1	
{0, 1, 2, 4, 5, 6, 9}	1	1	1	-3	-4	1	-6	-3	1	6	12	-15	-12	-6	26	13	1	1	-18	2	-6	34	47	9	
{0, 1, 2, 4, 5, 6, 8, 9}	1	1	1	-3	1	1	-6	-3	1	1	1	9	1	-34	-29	-3	18	1	1	-3	-27	-43	-22	9	
{0, 1, 2, 4, 5, 6, 7, 9}	1	1	1	1	-4	1	-6	-7	1	-4	12	13	-12	-20	-34	9	18	19	20	-24	-27	-54	-45	29	
{0, 1, 2, 4, 5, 6, 7, 8, 9}	1	1	1	1	1	1	-6	-7	-8	-9	1	13	14	8	-14	-23	-33	-26	1	31	57	45	1	-67	
{0, 1, 2, 3, 9}	1	1	1	1	1	1	1	1	1	1	-10	1	1	-13	1	17	1	1	-18	1	22	-10	1	1	
{0, 1, 2, 3, 8, 9}	1	1	1	1	1	1	1	1	1	1	-10	-11	-12	1	16	17	-16	-17	1	21	22	-10	-22	-35	
{0, 1, 2, 3, 7, 9}	1	1	1	1	1	1	1	1	1	1	-10	-23	-12	15	16	17	-33	-17	20	21	22	-10	-45	-71	
{0, 1, 2, 3, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-14	17	1	1	1	-19	1	1	1	1	
{0, 1, 2, 3, 6, 9}	1	1	1	1	1	1	1	9	1	1	-10	1	1	1	1	-7	1	-17	20	1	1	-10	1	9	
{0, 1, 2, 3, 6, 8, 9}	1	1	1	1	1	1	1	9	10	11	1	1	-12	1	1	9	-16	-62	-37	-29	22	23	24	-15	
{0, 1, 2, 3, 6, 7, 9}	1	1	1	1	1	1	1	1	10	11	12	1	-25	-13	16	33	1	-44	-56	-29	-20	34	70	49	
{0, 1, 2, 3, 6, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-20	1	1	1	
{0, 1, 2, 3, 5, 9}	1	1	1	1	1	-5	1	9	1	1	-10	-17	1	29	1	-23	-16	-23	39	61	1	-76	-45	-9	
{0, 1, 2, 3, 5, 8, 9}	1	1	1	1	1	-5	1	9	10	11	12	-17	-25	15	31	25	1	-86	-94	11	85	78	24	-153	
{0, 1, 2, 3, 5, 7, 9}	1	1	1	1	1	-5	1	1	1	1	1	-5	-12	1	1	1	18	-5	-18	1	1	1	24	-5	
{0, 1, 2, 3, 5, 7, 8, 9}	1	1	1	1	1	-5	1	1	1	1	12	7	-12	1	-14	1	52	13	-18	-19	-41	-10	47	31	
{0, 1, 2, 3, 5, 6, 9}	1	1	1	1	1	-5	-6	1	10	11	12	-5	-38	-6	16	49	35	-14	-75	-89	-6	122	162	67	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 2, 3, 5, 6, 8, 9}	1	1	1	1	1	-5	-6	1	1	1	1	7	-12	-20	-14	1	18	31	1	-39	-48	-21	24	55	
{0, 1, 2, 3, 5, 6, 7, 9}	1	1	1	1	1	-5	-6	-7	1	1	12	19	-12	-34	-29	-7	35	49	39	-19	-90	-98	-45	59	
{0, 1, 2, 3, 5, 6, 7, 8, 9}	1	1	1	1	1	-5	-6	-7	-8	-9	1	7	1	-6	-14	-39	-33	-14	1	11	15	-21	-68	-97	
{0, 1, 2, 3, 4, 9}	1	1	1	1	1	-5	1	1	1	1	1	-5	14	1	-14	1	1	-5	20	1	-20	1	1	-5	
{0, 1, 2, 3, 4, 8, 9}	1	1	1	1	1	-5	1	1	1	1	12	-5	1	-13	1	1	18	-5	1	-19	1	-10	24	-5	
{0, 1, 2, 3, 4, 7, 9}	1	1	1	1	1	-5	1	1	10	11	12	-17	-25	1	16	17	18	-32	-56	-29	22	78	93	-17	
{0, 1, 2, 3, 4, 7, 8, 9}	1	1	1	1	1	-5	1	1	1	1	12	-5	1	1	-14	1	18	-5	1	1	-20	-10	24	-5	
{0, 1, 2, 3, 4, 6, 9}	1	1	1	1	1	-5	-6	1	10	11	1	-5	-25	-6	16	33	18	-14	-56	-49	15	89	93	-5	
{0, 1, 2, 3, 4, 6, 8, 9}	1	1	1	1	1	-5	-6	1	1	1	12	19	-12	-20	-14	1	18	49	20	-39	-48	-32	-22	43	
{0, 1, 2, 3, 4, 6, 7, 9}	1	1	1	1	1	-5	-6	-7	1	1	12	7	-12	-20	-14	-7	18	31	20	-19	-48	-54	-22	47	
{0, 1, 2, 3, 4, 6, 7, 8, 9}	1	1	1	1	1	-5	-6	-7	-8	-9	1	7	1	-6	-14	-39	-33	-14	1	11	15	-21	-68	-97	
{0, 1, 2, 3, 4, 5, 9}	1	1	1	1	1	1	-6	1	1	1	1	-11	1	8	1	1	1	1	-18	1	15	1	1	-11	
{0, 1, 2, 3, 4, 5, 8, 9}	1	1	1	1	1	1	-6	1	1	1	12	1	1	-20	1	1	1	19	1	1	-27	-10	1	1	
{0, 1, 2, 3, 4, 5, 7, 9}	1	1	1	1	1	1	-6	-7	1	1	1	13	1	-6	-14	-7	1	1	20	21	-6	-21	-22	-19	
{0, 1, 2, 3, 4, 5, 7, 8, 9}	1	1	1	1	1	1	-6	-7	-8	-9	1	13	14	8	-14	-23	-33	-26	1	31	57	45	1	-67	
{0, 1, 2, 3, 4, 5, 6, 9}	1	1	1	1	1	1	1	-7	1	1	12	1	-12	1	1	-7	1	1	20	1	-20	-10	1	17	
{0, 1, 2, 3, 4, 5, 6, 8, 9}	1	1	1	1	1	1	1	-7	-8	-9	1	13	14	1	1	-7	-16	-26	-18	11	43	45	24	-19	
{0, 1, 2, 3, 4, 5, 6, 7, 9}	1	1	1	1	1	1	1	1	-8	-9	1	13	1	1	1	1	1	-8	-18	-9	22	23	1	-11	
{0, 1, 2, 3, 4, 5, 6, 7, 8, 9}	1	1	1	1	1	1	1	1	1	1	-10	1	1	1	1	1	1	1	1	1	1	-10	1	1	
{0, 10}	1	-1	-2	-1	1	-4	1	-1	-2	-1	1	-4	1	-1	-32	-1	1	-4	1	-1	-2	-1	1	-4	
{0, 9, 10}	1	1	-2	-3	1	4	-6	-3	-2	1	1	0	1	-6	-17	-3	18	76	1	-123	12	1	-45	48	
{0, 8, 10}	1	-1	1	-1	1	-1	-6	-1	1	-1	-10	-1	14	-36	-14	-49	18	-1	-18	-121	36	-100	-45	-1	
{0, 8, 9, 10}	1	1	1	-3	1	1	1	-3	1	1	1	9	-12	1	16	-3	1	1	-18	-3	-20	1	1	-15	
{0, 7, 10}	1	1	-2	-3	1	4	1	-3	7	1	-10	0	1	29	-17	13	1	-5	-18	-123	-2	-32	1	72	
{0, 7, 9, 10}	1	1	-2	1	1	-2	-6	1	7	1	12	-2	-12	8	28	1	-16	7	20	-19	-51	12	47	-50	
{0, 7, 8, 10}	1	1	1	-3	1	1	-6	-3	1	1	1	-3	-12	8	16	-19	-16	1	58	-43	-27	45	47	-51	
{0, 7, 8, 9, 10}	1	1	1	1	-4	-5	1	1	1	-4	1	-5	14	1	-4	17	1	-23	1	-4	22	1	-22	-5	
{0, 6, 10}	1	-1	-2	-1	1	-4	1	-9	7	-1	-10	-16	14	-1	-17	-9	18	-49	-37	-121	40	-100	-45	0	
{0, 6, 9, 10}	1	1	-2	-3	1	4	1	-3	7	1	12	-12	-12	1	-2	-3	-33	31	20	-43	-2	-10	24	-36	
{0, 6, 8, 10}	1	-1	1	-1	1	-1	8	-9	-8	-1	12	-1	-12	-64	16	-9	-16	-64	20	-1	-13	-144	1	-9	
{0, 6, 8, 9, 10}	1	1	1	-3	-4	1	1	-3	-8	-4	-10	-3	14	-13	-19	-19	18	-8	-18	-28	1	12	-22	-51	
{0, 6, 7, 10}	1	1	-2	-3	1	4	1	-3	-11	1	1	-12	-12	1	28	-3	-16	13	58	-23	-86	1	93	-36	
{0, 6, 7, 9, 10}	1	1	-2	1	-4	-2	1	1	-11	-4	-10	10	14	-27	-37	-15	18	-11	-18	-64	-2	12	1	-86	
{0, 6, 7, 8, 10}	1	1	1	-3	-4	1	8	-3	1	-4	-10	-3	14	-20	-19	-19	1	1	-18	-28	8	-10	24	-3	
{0, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	1	1	-14	1	18	-5	1	1	-20	1	24	-5	
{0, 5, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	1	1	-243	1	1	1	-3	
{0, 5, 9, 10}	1	1	1	-3	1	1	1	-3	1	11	12	-3	-12	1	1	13	-16	1	-18	-53	-20	-10	24	69	
{0, 5, 8, 10}	1	1	1	-3	1	1	1	-3	-8	11	12	9	1	1	1	-3	-16	-44	20	-53	-20	-32	1	-15	
{0, 5, 8, 9, 10}	1	1	1	-3	1	-5	1	-3	-8	1	1	15	1	1	1	-3	1	-14	-18	-3	22	1	24	-57	
{0, 5, 7, 10}	1	1	1	1	1	1	1	1	-8	11	12	1	-12	1	1	1	1	-26	20	-49	-20	-54	24	1	
{0, 5, 7, 9, 10}	1	1	1	1	1	-5	1	9	-8	1	1	-5	14	-13	1	-23	52	-14	-18	1	22	45	-45	-21	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 5, 7, 8, 10}	1	1	1	1	1	-5	1	1	1	1	-10	-5	14	-27	1	17	35	13	1	-39	1	12	24	-5	
{0, 5, 7, 8, 9, 10}	1	1	1	1	-4	1	1	9	1	-4	1	1	14	1	-4	-23	1	19	20	-4	-41	-21	24	57	
{0, 5, 6, 10}	1	1	1	-3	1	1	8	-3	1	11	1	-3	-12	-20	1	29	-16	1	20	-53	-13	1	1	45	
{0, 5, 6, 9, 10}	1	1	1	-3	1	1	1	5	1	1	-10	21	14	15	1	-11	35	19	-18	-23	1	-10	47	-43	
{0, 5, 6, 8, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-3	14	-13	1	-19	69	1	-18	-43	1	45	24	-27	
{0, 5, 6, 8, 9, 10}	1	1	1	-3	-4	-5	-6	5	1	-14	-10	-21	14	8	11	-59	-33	13	58	2	-90	-120	-22	107	
{0, 5, 6, 7, 10}	1	1	1	1	1	1	8	9	1	1	-10	13	14	-6	1	-23	1	1	1	-19	-13	12	24	-3	
{0, 5, 6, 7, 9, 10}	1	1	1	1	-4	-5	1	1	1	-14	-10	-17	14	29	11	-47	-16	-5	39	46	-20	-98	-45	79	
{0, 5, 6, 7, 8, 10}	1	1	1	1	-4	-5	1	9	1	-4	-10	-5	14	29	-4	-23	1	13	39	16	-41	-54	24	75	
{0, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	-6	1	1	1	1	1	1	8	1	-15	1	1	1	1	15	1	-22	1	
{0, 4, 10}	1	-1	-2	-1	1	-4	1	-9	7	-1	-10	-16	14	-1	-17	-9	18	-49	-37	-121	40	-100	-45	0	
{0, 4, 9, 10}	1	1	-2	-3	1	4	8	-3	7	11	12	-12	-12	-20	-2	-3	-50	13	20	-93	-100	-10	93	84	
{0, 4, 8, 10}	1	-1	1	-1	1	-1	1	-9	-8	-1	12	-1	-12	-1	16	-9	-16	-64	20	-1	-20	-144	24	-9	
{0, 4, 8, 9, 10}	1	1	1	-3	1	1	1	-3	-8	1	1	-3	14	1	-14	-3	35	-8	-18	-23	22	45	-22	-51	
{0, 4, 7, 10}	1	1	-2	-3	1	4	1	-3	-2	1	12	-12	1	1	-2	29	1	-14	20	-3	-2	-32	24	12	
{0, 4, 7, 9, 10}	1	1	-2	1	1	-2	8	9	-2	1	-10	10	14	-20	-47	-23	52	-38	-37	-39	47	144	24	-102	
{0, 4, 7, 8, 10}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-3	14	15	-49	-3	52	1	1	-28	43	-10	-45	45	
{0, 4, 7, 8, 9, 10}	1	1	1	1	-4	-5	1	9	1	-14	-10	-17	1	43	11	-23	-16	-5	39	66	-41	-142	-91	87	
{0, 4, 6, 10}	1	-1	-2	-1	1	-4	1	-1	-11	-1	1	-4	1	-1	-2	-1	1	-121	1	-1	-2	-1	1	-4	
{0, 4, 6, 9, 10}	1	1	-2	-3	1	4	1	-3	-11	1	-10	-12	1	1	-2	-3	18	67	1	-43	19	78	1	-108	
{0, 4, 6, 8, 10}	1	-1	1	-1	-4	-1	1	-1	1	-16	-10	-25	14	-1	-4	-81	-16	-1	39	-16	-41	-100	1	-25	
{0, 4, 6, 8, 9, 10}	1	1	1	-3	-4	1	-6	-3	1	-4	-10	-15	1	-6	11	-19	-16	1	20	-8	-27	-32	1	-39	
{0, 4, 6, 7, 10}	1	1	-2	-3	-4	4	1	-3	7	-4	-10	-12	14	15	-37	-3	35	31	1	-48	19	34	24	-12	
{0, 4, 6, 7, 9, 10}	1	1	-2	1	-4	-2	1	1	7	-14	-21	-26	-12	29	-7	-31	-50	-29	20	26	-23	-153	-160	-2	
{0, 4, 6, 7, 8, 10}	1	1	1	-3	1	1	1	-3	10	-9	-10	-15	14	1	1	-35	1	-26	20	7	22	-76	1	-15	
{0, 4, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	-6	1	10	1	1	-17	-12	-6	31	17	1	-32	-37	-19	57	67	24	-89	
{0, 4, 5, 10}	1	1	1	-3	1	1	8	-3	1	11	1	-3	-12	-20	1	29	-16	1	20	-53	-13	1	1	45	
{0, 4, 5, 9, 10}	1	1	1	-3	1	1	1	5	1	1	1	9	14	1	31	-27	1	19	20	-43	1	-21	1	-7	
{0, 4, 5, 8, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	1	1	-3	69	1	-37	-23	22	23	1	-51	
{0, 4, 5, 8, 9, 10}	1	1	1	-3	1	-5	-6	5	1	1	1	-21	-12	-6	46	-27	-16	-23	39	-3	-6	23	-22	-13	
{0, 4, 5, 7, 10}	1	1	1	1	1	1	8	1	1	1	1	1	1	-20	1	33	35	1	-18	-19	29	1	-22	-23	
{0, 4, 5, 7, 9, 10}	1	1	1	1	1	-5	1	1	1	-9	-10	-17	1	1	1	-47	-67	31	1	31	-20	-54	-45	-17	
{0, 4, 5, 7, 8, 10}	1	1	1	1	-4	-5	1	1	10	-14	-10	-17	1	29	11	-47	-16	-32	58	26	1	-98	-91	31	
{0, 4, 5, 7, 8, 9, 10}	1	1	1	1	-4	1	-6	1	10	6	12	-23	-12	-6	26	33	1	-26	-75	-14	57	78	70	-95	
{0, 4, 5, 6, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-15	27	1	1	-3	1	-17	1	-3	1	-21	1	-15	
{0, 4, 5, 6, 9, 10}	1	1	1	-3	1	1	-6	-3	1	1	1	-27	-12	-6	16	-19	1	19	1	-3	-6	1	1	-27	
{0, 4, 5, 6, 8, 10}	1	1	1	-3	-4	1	-6	-3	1	-4	-10	-15	1	-6	-4	-35	-16	-17	-18	-8	-27	-32	-68	-63	
{0, 4, 5, 6, 8, 9, 10}	1	1	1	-3	-4	-5	1	-3	1	-4	1	-9	-12	1	11	-3	-16	-23	1	-8	1	1	-22	-33	
{0, 4, 5, 6, 7, 10}	1	1	1	1	-4	1	1	1	10	-14	1	-23	1	43	11	1	-16	-26	39	6	43	-87	-114	49	
{0, 4, 5, 6, 7, 9, 10}	1	1	1	1	-4	-5	-6	-7	10	6	1	-17	-38	-6	26	-7	1	-32	-56	-34	-6	67	24	-73	
{0, 4, 5, 6, 7, 8, 10}	1	1	1	1	1	-5	-6	1	1	1	12	-5	-25	-6	1	-15	35	13	-37	-19	-6	-10	24	43	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 4, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	1	-7	1	1	1	1	-12	1	16	-7	1	1	1	1	-20	1	24	-7	
{0, 3, 10}	1	1	-2	-3	1	4	1	-3	7	1	-10	0	1	29	-17	13	1	-5	-18	-123	-2	-32	1	72	
{0, 3, 9, 10}	1	1	-2	1	1	4	-6	1	7	1	12	-8	-12	8	-2	1	-16	13	1	-19	-9	-32	70	-32	
{0, 3, 8, 10}	1	1	1	-3	1	1	-6	-3	-8	11	12	9	-12	8	1	-19	-16	-8	58	-93	-90	-54	139	-15	
{0, 3, 8, 9, 10}	1	1	1	1	1	1	1	1	-8	1	1	25	14	-27	-29	17	52	10	-75	-39	85	45	-22	-143	
{0, 3, 7, 10}	1	1	-2	-3	1	-2	1	-3	-11	1	1	-6	1	1	-2	-3	1	-29	1	-3	-2	1	1	-30	
{0, 3, 7, 9, 10}	1	1	-2	1	-4	-2	-6	1	-11	-4	1	10	14	8	-37	-15	18	25	-37	-44	33	45	47	-86	
{0, 3, 7, 8, 10}	1	1	1	-3	1	-5	-6	-3	1	1	-10	3	1	8	1	13	18	-23	-37	-23	57	34	1	-45	
{0, 3, 7, 8, 9, 10}	1	1	1	1	-4	-5	1	1	1	-14	-10	-17	1	29	11	-15	-16	-23	39	6	-62	-76	-68	55	
{0, 3, 6, 10}	1	1	-2	-3	1	4	1	-3	-2	1	12	-12	1	1	-2	29	1	-14	20	-3	-2	-32	24	12	
{0, 3, 6, 9, 10}	1	1	-2	1	-4	4	1	9	-2	-4	1	4	1	-13	-7	-23	1	4	1	-4	-23	45	-22	12	
{0, 3, 6, 8, 10}	1	1	1	-3	1	1	8	-3	1	1	1	-3	1	-20	-14	-19	1	1	-18	-23	29	23	1	-3	
{0, 3, 6, 8, 9, 10}	1	1	1	1	-4	1	1	9	1	-14	-10	1	14	29	-4	-23	-33	1	58	6	-41	-76	24	129	
{0, 3, 6, 7, 10}	1	1	-2	-3	-4	-2	1	5	7	-4	1	18	1	15	-7	-27	-16	7	1	-8	-44	1	1	2	
{0, 3, 6, 7, 9, 10}	1	1	-2	1	1	-2	1	1	7	1	1	-2	1	1	13	17	-16	7	20	21	-2	1	1	-2	
{0, 3, 6, 7, 8, 10}	1	1	1	-3	-4	-5	8	5	10	-14	1	-21	14	-6	11	-59	1	-32	77	-38	50	-131	70	-61	
{0, 3, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	1	-13	16	1	1	-14	1	-19	22	1	24	-29	
{0, 3, 5, 10}	1	1	1	1	1	1	1	1	-8	11	12	1	-12	1	1	1	1	-26	20	-49	-20	-54	24	1	
{0, 3, 5, 9, 10}	1	1	1	1	1	1	1	9	-8	1	-10	1	14	1	1	-7	52	-8	-56	41	85	12	-22	-111	
{0, 3, 5, 8, 10}	1	1	1	1	1	-5	1	1	1	1	-10	-5	1	1	31	-15	1	31	1	-59	1	-10	24	19	
{0, 3, 5, 8, 9, 10}	1	1	1	1	1	-5	1	9	1	-9	-10	-5	14	15	1	-55	-16	31	39	11	-62	-54	24	99	
{0, 3, 5, 7, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	1	-13	1	-15	1	-5	1	1	1	1	1	-53	
{0, 3, 5, 7, 9, 10}	1	1	1	1	-4	-5	1	1	1	-4	1	-5	14	15	11	-31	-16	67	20	-64	-41	45	24	-53	
{0, 3, 5, 7, 8, 10}	1	1	1	1	1	1	1	1	1	1	-10	1	-12	15	16	-15	1	1	1	21	1	-10	1	-23	
{0, 3, 5, 7, 8, 9, 10}	1	1	1	1	-4	1	1	1	1	6	12	1	-25	-13	11	33	18	-35	-37	6	22	12	1	25	
{0, 3, 5, 6, 10}	1	1	1	1	1	1	8	1	1	1	1	1	1	-20	1	33	35	1	-18	-19	29	1	-22	-23	
{0, 3, 5, 6, 9, 10}	1	1	1	1	-4	1	1	1	1	-4	-10	1	1	1	-4	1	-16	19	-18	-4	1	-32	24	1	
{0, 3, 5, 6, 8, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	-12	15	46	1	-16	-32	-18	21	43	23	-22	-77	
{0, 3, 5, 6, 8, 9, 10}	1	1	1	1	-4	-5	-6	1	10	6	1	-5	-12	-6	26	33	1	-50	-37	6	57	45	1	-101	
{0, 3, 5, 6, 7, 10}	1	1	1	1	-4	-5	8	1	10	-14	-10	-5	14	22	11	-47	1	22	39	6	-55	-76	1	67	
{0, 3, 5, 6, 7, 9, 10}	1	1	1	1	1	-5	1	-7	10	1	12	-5	1	1	46	-7	18	-32	1	1	43	-10	47	-109	
{0, 3, 5, 6, 7, 8, 10}	1	1	1	1	-4	1	1	1	1	-4	12	1	1	1	11	17	1	1	-18	-24	22	12	24	-23	
{0, 3, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	-6	-7	1	11	12	1	1	-20	-14	-7	18	37	20	-9	-48	-54	-22	41	
{0, 3, 4, 10}	1	1	-2	-3	1	4	1	-3	-11	1	1	-12	-12	1	28	-3	-16	13	58	-23	-86	1	93	-36	
{0, 3, 4, 9, 10}	1	1	-2	1	1	4	8	1	-11	1	-10	4	1	-20	-2	1	1	-5	-18	-19	47	-10	-22	4	
{0, 3, 4, 8, 10}	1	1	1	-3	1	1	1	-3	1	1	-10	-3	14	1	-44	13	69	-17	-113	-43	106	78	-45	-51	
{0, 3, 4, 8, 9, 10}	1	1	1	1	1	1	1	1	1	1	1	-11	14	1	16	-31	-16	1	58	-39	-41	-21	70	13	
{0, 3, 4, 7, 10}	1	1	-2	-3	-4	-2	1	5	7	-4	1	18	1	15	-7	-27	-16	7	1	-8	-44	1	1	2	
{0, 3, 4, 7, 9, 10}	1	1	-2	1	-4	-2	8	1	7	-4	-10	-26	-12	-6	-7	-15	-33	-11	58	76	5	-10	-68	-2	
{0, 3, 4, 7, 8, 10}	1	1	1	-3	-4	-5	1	5	10	-4	1	-21	1	1	26	-43	-50	-14	1	-8	-20	-43	-22	-13	
{0, 3, 4, 7, 8, 9, 10}	1	1	1	1	-4	-5	1	1	10	-4	1	-17	-12	-13	41	17	1	-50	-37	16	85	45	1	-137	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 3, 4, 6, 10}	1	1	-2	-3	-4	4	1	-3	7	-4	-10	-12	14	15	-37	-3	35	31	1	-48	19	34	24	-12	
{0, 3, 4, 6, 9, 10}	1	1	-2	1	-4	4	1	1	7	-4	-10	4	-12	15	8	1	-33	-23	20	-4	19	-10	-45	28	
{0, 3, 4, 6, 8, 10}	1	1	1	-3	-4	1	1	-3	10	-4	-10	-15	14	1	11	-19	1	-26	1	32	43	-76	-68	9	
{0, 3, 4, 6, 8, 9, 10}	1	1	1	1	-4	1	-6	1	10	6	12	1	-25	-20	26	33	1	-62	-56	6	36	78	47	-23	
{0, 3, 4, 6, 7, 10}	1	1	-2	-3	1	-2	1	-3	-2	1	1	-30	1	1	-2	-19	1	-2	1	-3	-2	1	1	-30	
{0, 3, 4, 6, 7, 9, 10}	1	1	-2	1	1	-2	1	-7	-2	1	1	10	1	-13	28	9	1	-2	-18	1	-2	1	24	2	
{0, 3, 4, 6, 7, 8, 10}	1	1	1	-3	1	-5	1	-3	1	1	1	-9	1	1	16	-3	1	-5	1	-3	1	1	1	-9	
{0, 3, 4, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	-6	-7	1	11	12	7	-12	-34	-14	9	35	49	20	-49	-90	-76	24	143	
{0, 3, 4, 5, 10}	1	1	1	1	1	1	8	9	1	1	-10	13	14	-6	1	-23	1	1	1	-19	-13	12	24	-3	
{0, 3, 4, 5, 9, 10}	1	1	1	1	1	1	1	1	1	1	1	-11	14	1	46	-15	-33	1	39	41	-41	-43	-22	-11	
{0, 3, 4, 5, 8, 10}	1	1	1	1	1	-5	1	9	1	-9	-10	-5	14	43	1	-55	-33	13	39	31	-41	-54	1	75	
{0, 3, 4, 5, 8, 9, 10}	1	1	1	1	1	-5	-6	1	1	1	1	-5	1	-20	1	33	-16	-23	-18	21	-6	1	24	-29	
{0, 3, 4, 5, 7, 10}	1	1	1	1	-4	-5	8	1	10	-14	-10	-5	14	22	11	-47	1	22	39	6	-55	-76	1	67	
{0, 3, 4, 5, 7, 9, 10}	1	1	1	1	-4	-5	1	-7	10	6	1	-5	-25	1	41	-7	-33	-68	-37	66	1	23	1	-157	
{0, 3, 4, 5, 7, 8, 10}	1	1	1	1	-4	1	1	1	1	6	1	-11	-12	1	26	17	-16	1	1	6	22	1	1	-35	
{0, 3, 4, 5, 7, 8, 9, 10}	1	1	1	1	-4	1	-6	-7	1	6	12	13	-12	-20	-19	9	35	37	20	-34	-48	-54	1	77	
{0, 3, 4, 5, 6, 10}	1	1	1	1	-4	1	1	1	10	-14	1	-23	1	43	11	1	-16	-26	39	6	43	-87	-114	49	
{0, 3, 4, 5, 6, 9, 10}	1	1	1	1	-4	1	-6	-7	10	-4	1	1	-12	-6	11	-7	1	-26	20	-4	-27	45	-45	17	
{0, 3, 4, 5, 6, 8, 10}	1	1	1	1	-4	-5	-6	1	1	6	12	-5	-25	-6	26	17	18	-23	-56	-34	15	56	70	-5	
{0, 3, 4, 5, 6, 8, 9, 10}	1	1	1	1	-4	-5	1	-7	1	6	1	19	-12	-27	11	9	35	13	-18	6	-20	-21	47	11	
{0, 3, 4, 5, 6, 7, 10}	1	1	1	1	1	-5	1	-7	1	1	1	-17	1	1	1	-23	1	-5	1	1	1	1	1	-25	
{0, 3, 4, 5, 6, 7, 9, 10}	1	1	1	1	1	-5	-6	1	1	11	12	7	-12	-20	16	33	18	13	-18	-29	-27	12	47	55	
{0, 3, 4, 5, 6, 7, 8, 10}	1	1	1	1	1	1	-6	-7	-8	11	12	13	1	-6	1	-23	1	10	39	11	-6	-32	-45	-19	
{0, 3, 4, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	1	1	-8	1	1	13	1	-13	1	1	1	-8	1	1	22	1	-22	-11	
{0, 2, 10}	1	-1	1	-1	1	-1	-6	-1	1	-1	-10	-1	14	-36	-14	-49	18	-1	-18	-121	36	-100	-45	-1	
{0, 2, 9, 10}	1	1	1	-3	1	1	-6	-3	1	1	12	-3	-38	8	16	-3	-16	1	20	-23	-90	-10	70	93	
{0, 2, 8, 10}	1	-1	1	-1	1	-1	1	-1	1	-1	1	-1	-12	-1	1	-1	1	-1	1	-1	1	-1	1	-1	
{0, 2, 8, 9, 10}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-3	14	15	-19	-35	1	37	-18	-48	-20	34	47	-27	
{0, 2, 7, 10}	1	1	1	-3	1	1	-6	-3	-8	11	12	9	-12	8	1	-19	-16	-8	58	-93	-90	-54	139	-15	
{0, 2, 7, 9, 10}	1	1	1	1	1	-5	-6	1	-8	1	1	-5	14	8	-14	1	1	-14	-18	-19	36	45	1	-53	
{0, 2, 7, 8, 10}	1	1	1	-3	1	1	1	-3	1	1	-10	-3	14	1	-14	-19	35	1	-37	-43	22	78	1	-75	
{0, 2, 7, 8, 9, 10}	1	1	1	1	-4	-5	1	1	1	-4	1	-5	14	15	-4	1	1	-23	20	-4	1	1	-22	19	
{0, 2, 6, 10}	1	-1	1	-1	1	-1	1	-9	-8	-1	12	-1	-12	-1	16	-9	-16	-64	20	-1	-20	-144	24	-9	
{0, 2, 6, 9, 10}	1	1	1	-3	-4	1	1	-3	-8	-4	1	-3	1	1	-19	-3	18	-8	-18	-48	85	1	-22	-51	
{0, 2, 6, 8, 10}	1	-1	1	-1	-4	-1	1	-9	1	-16	-10	-25	14	-1	-19	-25	1	-1	20	-196	-62	-100	70	-9	
{0, 2, 6, 8, 9, 10}	1	1	1	-3	1	1	1	-3	1	-9	-10	-15	1	1	31	-19	-33	-35	58	47	-62	-120	1	9	
{0, 2, 6, 7, 10}	1	1	1	-3	1	1	1	-3	1	1	-10	-3	14	1	-44	13	69	-17	-113	-43	106	78	-45	-51	
{0, 2, 6, 7, 9, 10}	1	1	1	1	-4	-5	1	1	1	-14	-10	-17	1	29	11	-63	-33	31	77	46	-125	-186	-22	127	
{0, 2, 6, 7, 8, 10}	1	1	1	-3	-4	1	1	-3	1	-4	-21	-15	14	1	-4	-19	-33	-17	39	52	-20	-153	-68	81	
{0, 2, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	-25	-13	16	17	18	-5	-37	-19	22	23	24	-5	
{0, 2, 5, 10}	1	1	1	-3	1	1	1	-3	-8	11	12	9	1	1	1	-3	-16	-44	20	-53	-20	-32	1	-15	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 2, 5, 9, 10}	1	1	1	-3	1	-5	1	-3	-8	1	-10	3	1	1	1	-3	18	-14	-18	37	106	144	47	-93	
{0, 2, 5, 8, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	1	1	-35	1	1	1	-3	1	-21	1	-3	
{0, 2, 5, 8, 9, 10}	1	1	1	-3	-4	-5	1	-3	1	-14	-10	-21	14	43	11	-67	-33	49	115	-18	-83	-120	24	147	
{0, 2, 5, 7, 10}	1	1	1	1	1	-5	1	1	1	1	-10	-5	1	1	31	-15	1	31	1	-59	1	-10	24	19	
{0, 2, 5, 7, 9, 10}	1	1	1	1	1	1	1	9	1	1	-10	1	1	1	46	-23	-50	1	39	1	1	-10	-22	9	
{0, 2, 5, 7, 8, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	1	1	16	1	1	-32	1	1	1	1	24	-5	
{0, 2, 5, 7, 8, 9, 10}	1	1	1	1	-4	1	1	9	10	-4	1	1	1	1	11	-7	-16	-8	1	-4	1	1	-22	-15	
{0, 2, 5, 6, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	1	1	-3	69	1	-37	-23	22	23	1	-51	
{0, 2, 5, 6, 9, 10}	1	1	1	-3	-4	-5	1	5	1	-4	-10	-21	-12	1	11	-59	-50	31	77	-28	-41	-10	47	35	
{0, 2, 5, 6, 8, 10}	1	1	1	-3	-4	1	-6	-3	10	-4	1	-15	1	-6	11	-19	-33	-26	1	-8	-6	-87	-22	-63	
{0, 2, 5, 6, 8, 9, 10}	1	1	1	-3	1	-5	-6	5	10	1	12	-9	-25	-6	91	21	-33	-68	-18	37	120	78	-68	-193	
{0, 2, 5, 6, 7, 10}	1	1	1	1	1	-5	1	9	1	-9	-10	-5	14	43	1	-55	-33	13	39	31	-41	-54	1	75	
{0, 2, 5, 6, 7, 9, 10}	1	1	1	1	-4	1	1	1	1	6	12	-11	-25	-13	41	49	-33	-71	-37	26	64	34	-22	-59	
{0, 2, 5, 6, 7, 8, 10}	1	1	1	1	-4	-5	-6	9	1	6	1	-5	1	-20	11	-7	1	-23	-37	-34	-48	67	24	3	
{0, 2, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	-6	1	1	11	12	13	-12	-34	1	1	18	19	20	-29	-69	-32	1	85	
{0, 2, 4, 10}	1	-1	1	-1	1	-1	8	-9	-8	-1	12	-1	-12	-64	16	-9	-16	-64	20	-1	-13	-144	1	-9	
{0, 2, 4, 9, 10}	1	1	1	-3	1	1	8	-3	-8	1	1	-3	14	-20	1	-19	1	-8	1	-43	71	1	-45	-3	
{0, 2, 4, 8, 10}	1	-1	1	-1	-4	-1	1	-9	1	-16	-10	-25	14	-1	-19	-25	1	-1	20	-196	-62	-100	70	-9	
{0, 2, 4, 8, 9, 10}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-15	14	1	-4	-19	-33	-17	39	-8	-41	-120	-45	57	
{0, 2, 4, 7, 10}	1	1	1	-3	1	1	8	-3	1	1	1	-3	1	-20	-14	-19	1	1	-18	-23	29	23	1	-3	
{0, 2, 4, 7, 9, 10}	1	1	1	1	1	-5	8	9	1	1	-10	-5	14	-6	1	-23	-33	31	58	-39	-34	-10	1	123	
{0, 2, 4, 7, 8, 10}	1	1	1	-3	-4	1	1	-3	10	-4	-10	-15	14	1	-19	-19	-16	-26	1	52	43	-142	-45	81	
{0, 2, 4, 7, 8, 9, 10}	1	1	1	1	-4	-5	1	9	10	6	12	-5	-25	-13	26	9	-16	-50	-94	26	64	78	24	-93	
{0, 2, 4, 6, 10}	1	-1	1	-1	-4	-1	1	-1	1	-16	-10	-25	14	-1	-4	-81	-16	-1	39	-16	-41	-100	1	-25	
{0, 2, 4, 6, 9, 10}	1	1	1	-3	-4	1	1	-3	1	-4	1	-15	1	1	26	-19	-33	-17	39	-8	1	-43	-22	-39	
{0, 2, 4, 6, 8, 10}	1	-1	1	-1	1	-1	-6	-1	1	-1	1	-1	1	-36	1	-1	1	-1	1	-1	-6	-1	1	-1	
{0, 2, 4, 6, 8, 9, 10}	1	1	1	-3	1	1	-6	-3	1	1	1	-3	1	-20	1	-3	1	1	1	-3	-6	1	1	-3	
{0, 2, 4, 6, 7, 10}	1	1	1	-3	-4	1	1	-3	10	-4	-10	-15	14	1	11	-19	1	-26	1	32	43	-76	-68	9	
{0, 2, 4, 6, 7, 9, 10}	1	1	1	1	-4	-5	1	1	10	-4	1	-17	-12	-13	26	33	1	-68	-37	-4	85	67	1	-137	
{0, 2, 4, 6, 7, 8, 10}	1	1	1	-3	1	1	-6	-3	1	1	1	-3	1	-20	1	-3	1	1	1	-3	-6	1	1	-3	
{0, 2, 4, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	-6	1	1	1	1	-5	1	-6	1	1	1	-5	1	1	-6	1	1	-5	
{0, 2, 4, 5, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-3	14	-13	1	-19	69	1	-18	-43	1	45	24	-27	
{0, 2, 4, 5, 9, 10}	1	1	1	-3	1	-5	1	5	1	-9	-10	-21	1	1	1	-59	-33	-5	1	-33	-62	-98	-45	-13	
{0, 2, 4, 5, 8, 10}	1	1	1	-3	-4	1	-6	-3	10	-4	1	-15	1	-6	11	-19	-33	-26	1	-8	-6	-87	-22	-63	
{0, 2, 4, 5, 8, 9, 10}	1	1	1	-3	-4	-5	-6	5	10	6	12	-9	-12	-6	41	21	-33	-68	-18	42	57	12	-22	-97	
{0, 2, 4, 5, 7, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	-12	15	46	1	-16	-32	-18	21	43	23	-22	-77	
{0, 2, 4, 5, 7, 9, 10}	1	1	1	1	1	1	1	1	10	1	1	1	-12	-13	1	17	18	-26	-18	21	1	23	1	-23	
{0, 2, 4, 5, 7, 8, 10}	1	1	1	1	-4	-5	-6	1	1	-4	1	-17	1	-20	-4	1	-16	-5	-18	-4	-6	-21	1	-41	
{0, 2, 4, 5, 7, 8, 9, 10}	1	1	1	1	-4	1	-6	1	1	6	12	1	1	-34	-4	17	35	37	-37	-34	-48	12	47	49	
{0, 2, 4, 5, 6, 10}	1	1	1	-3	-4	1	-6	-3	1	-4	-10	-15	1	-6	-4	-35	-16	-17	-18	-8	-27	-32	-68	-63	
{0, 2, 4, 5, 6, 9, 10}	1	1	1	-3	-4	-5	-6	-3	1	6	1	-9	-25	-6	11	13	-16	-23	-37	-18	-6	1	-22	-57	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 2, 4, 5, 6, 8, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	-27	1	-3	1	1	1	-3	1	1	1	-3	
{0, 2, 4, 5, 6, 8, 9, 10}	1	1	1	-3	1	-5	1	-3	1	1	12	-9	1	-13	1	-19	18	-5	1	-23	1	-32	24	-9	
{0, 2, 4, 5, 6, 7, 10}	1	1	1	1	-4	-5	-6	1	1	6	12	-5	-25	-6	26	17	18	-23	-56	-34	15	56	70	-5	
{0, 2, 4, 5, 6, 7, 9, 10}	1	1	1	1	-4	1	-6	-7	1	6	12	1	-12	-20	-19	9	18	19	20	-34	-48	-32	1	65	
{0, 2, 4, 5, 6, 7, 8, 10}	1	1	1	1	1	-5	1	1	-8	1	12	-5	1	-13	-14	1	18	-14	1	21	-20	-10	24	-29	
{0, 2, 4, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	1	-7	-8	1	1	1	14	1	1	-7	-16	-8	1	1	22	23	1	-7	
{0, 2, 3, 10}	1	1	1	-3	1	1	-6	-3	1	1	1	-3	-12	8	16	-19	-16	1	58	-43	-27	45	47	-51	
{0, 2, 3, 9, 10}	1	1	1	1	-4	1	-6	1	1	-4	-10	25	1	8	-19	-15	1	19	1	-64	-6	78	47	-143	
{0, 2, 3, 8, 10}	1	1	1	-3	1	1	1	-3	1	1	-10	-3	14	1	-14	-19	35	1	-37	-43	22	78	1	-75	
{0, 2, 3, 8, 9, 10}	1	1	1	1	-4	1	1	1	1	-14	-10	-11	1	1	26	1	-50	-17	1	26	1	-54	1	-11	
{0, 2, 3, 7, 10}	1	1	1	-3	1	-5	-6	-3	1	1	-10	3	1	8	1	13	18	-23	-37	-23	57	34	1	-45	
{0, 2, 3, 7, 9, 10}	1	1	1	1	-4	-5	-6	1	1	-14	-10	-17	1	-6	-4	1	1	13	20	6	-111	-142	-68	31	
{0, 2, 3, 7, 8, 10}	1	1	1	-3	1	-5	1	-3	1	-9	-10	-21	-12	29	1	-67	-50	31	77	7	-83	-120	-68	3	
{0, 2, 3, 7, 8, 9, 10}	1	1	1	1	-4	-5	1	1	1	6	12	-5	-12	-27	-4	33	18	-23	-37	-14	43	34	1	-29	
{0, 2, 3, 6, 10}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-3	14	15	-49	-3	52	1	1	-28	43	-10	-45	45	
{0, 2, 3, 6, 9, 10}	1	1	1	1	1	1	1	9	1	1	1	1	-12	15	1	-7	-33	19	39	-39	-20	1	24	-39	
{0, 2, 3, 6, 8, 10}	1	1	1	-3	-4	1	1	-3	10	-4	-10	-15	14	1	-19	-19	-16	-26	1	52	43	-142	-45	81	
{0, 2, 3, 6, 8, 9, 10}	1	1	1	1	1	1	1	9	10	1	12	1	-12	1	16	-7	-16	-44	-75	-39	43	56	1	-15	
{0, 2, 3, 6, 7, 10}	1	1	1	-3	-4	-5	1	5	10	-4	1	-21	1	1	26	-43	-50	-14	1	-8	-20	-43	-22	-13	
{0, 2, 3, 6, 7, 9, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	1	-27	16	1	18	-50	20	1	43	-21	-22	-5	
{0, 2, 3, 6, 7, 8, 10}	1	1	1	-3	-4	-5	1	5	1	6	1	-9	-25	-13	26	21	-33	-59	-56	22	43	89	-22	-121	
{0, 2, 3, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	11	12	19	1	-27	-29	17	18	31	1	-49	-62	-32	-22	43	
{0, 2, 3, 5, 10}	1	1	1	1	1	-5	1	1	1	1	-10	-5	14	-27	1	17	35	13	1	-39	1	12	24	-5	
{0, 2, 3, 5, 9, 10}	1	1	1	1	-4	-5	1	9	1	-14	-21	-17	1	29	11	-55	-50	49	96	26	-125	-175	-45	159	
{0, 2, 3, 5, 8, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	1	1	16	1	1	-32	1	1	1	1	24	-5	
{0, 2, 3, 5, 8, 9, 10}	1	1	1	1	-4	-5	1	9	10	6	1	-5	1	-13	26	9	-33	-50	20	46	43	-21	-45	-21	
{0, 2, 3, 5, 7, 10}	1	1	1	1	1	1	1	1	1	1	-10	1	-12	15	16	-15	1	1	1	21	1	-10	1	-23	
{0, 2, 3, 5, 7, 9, 10}	1	1	1	1	-4	1	1	1	1	-4	1	1	-12	-27	-4	33	18	-17	-37	16	22	1	1	-47	
{0, 2, 3, 5, 7, 8, 10}	1	1	1	1	1	1	1	1	1	1	1	1	1	-13	1	1	1	1	1	-19	1	1	1	1	
{0, 2, 3, 5, 7, 8, 9, 10}	1	1	1	1	-4	1	1	1	1	6	12	1	-12	-27	11	33	18	-17	-37	-14	22	12	1	25	
{0, 2, 3, 5, 6, 10}	1	1	1	1	-4	-5	1	1	10	-14	-10	-17	1	29	11	-47	-16	-32	58	26	1	-98	-91	31	
{0, 2, 3, 5, 6, 9, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	-12	-13	46	33	-16	-32	-18	21	64	23	-22	-101	
{0, 2, 3, 5, 6, 8, 10}	1	1	1	1	-4	-5	-6	1	1	-4	1	-17	1	-20	-4	1	-16	-5	-18	-4	-6	-21	1	-41	
{0, 2, 3, 5, 6, 8, 9, 10}	1	1	1	1	1	-5	-6	1	1	1	1	7	1	-34	-14	1	35	31	1	-59	-48	1	47	55	
{0, 2, 3, 5, 6, 7, 10}	1	1	1	1	-4	1	1	1	1	6	1	-11	-12	1	26	17	-16	1	1	6	22	1	1	-35	
{0, 2, 3, 5, 6, 7, 9, 10}	1	1	1	1	1	1	1	-7	1	1	1	1	1	-27	-14	9	18	19	1	-19	-20	-21	1	17	
{0, 2, 3, 5, 6, 7, 8, 10}	1	1	1	1	-4	1	-6	1	-8	6	1	1	1	-34	11	-15	18	-8	1	6	-27	23	-45	49	
{0, 2, 3, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	-6	-7	-8	1	1	13	14	-6	-14	-23	-16	-8	20	41	36	1	-45	-67	
{0, 2, 3, 4, 10}	1	1	1	-3	-4	1	8	-3	1	-4	-10	-3	14	-20	-19	-19	1	1	-18	-28	8	-10	24	-3	
{0, 2, 3, 4, 9, 10}	1	1	1	1	-4	1	8	1	1	-14	-10	-11	14	-6	26	1	-33	19	39	6	-13	-142	-22	85	
{0, 2, 3, 4, 8, 10}	1	1	1	-3	-4	1	1	-3	1	-4	-21	-15	14	1	-4	-19	-33	-17	39	52	-20	-153	-68	81	

Size of input, n:

Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 2, 3, 4, 8, 9, 10}	1	1	1	1	-4	1	1	1	1	-4	1	-11	1	1	11	1	-16	-35	-18	-4	22	1	-22	-35	
{0, 2, 3, 4, 7, 10}	1	1	1	-3	-4	-5	8	5	10	-14	1	-21	14	-6	11	-59	1	-32	77	-38	50	-131	70	-61	
{0, 2, 3, 4, 7, 9, 10}	1	1	1	1	-4	-5	8	1	10	6	12	-5	-12	-20	26	33	1	-104	-75	-54	134	56	24	-125	
{0, 2, 3, 4, 7, 8, 10}	1	1	1	-3	-4	-5	1	5	1	6	1	-9	-25	-13	26	21	-33	-59	-56	22	43	89	-22	-121	
{0, 2, 3, 4, 7, 8, 9, 10}	1	1	1	1	-4	-5	1	1	1	6	12	7	1	-27	-34	1	35	31	-37	-74	-62	34	70	55	
{0, 2, 3, 4, 6, 10}	1	1	1	-3	1	1	1	-3	10	-9	-10	-15	14	1	1	-35	1	-26	20	7	22	-76	1	-15	
{0, 2, 3, 4, 6, 9, 10}	1	1	1	1	1	1	1	1	10	1	12	1	1	-13	31	17	-33	-80	-37	1	64	34	24	-47	
{0, 2, 3, 4, 6, 8, 10}	1	1	1	-3	1	1	-6	-3	1	1	1	-3	1	-20	1	-3	1	1	1	-3	-6	1	1	-3	
{0, 2, 3, 4, 6, 8, 9, 10}	1	1	1	1	1	1	-6	1	1	1	12	1	1	-6	-14	-15	35	37	-37	-39	15	12	1	25	
{0, 2, 3, 4, 6, 7, 10}	1	1	1	-3	1	-5	1	-3	1	1	1	-9	1	1	16	-3	1	-5	1	-3	1	1	1	-9	
{0, 2, 3, 4, 6, 7, 9, 10}	1	1	1	1	1	-5	1	-7	1	1	1	7	1	-27	-14	9	18	13	-18	-19	-20	1	24	23	
{0, 2, 3, 4, 6, 7, 8, 10}	1	1	1	-3	1	-5	-6	-3	-8	1	1	-9	-12	-20	-14	-19	1	-14	-18	-23	-27	-43	-22	-33	
{0, 2, 3, 4, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	-6	-7	-8	1	1	7	14	-20	-29	-23	-16	4	39	21	-6	-43	-91	-73	
{0, 2, 3, 4, 5, 10}	1	1	1	1	-4	-5	1	9	1	-4	-10	-5	14	29	-4	-23	1	13	39	16	-41	-54	24	75	
{0, 2, 3, 4, 5, 9, 10}	1	1	1	1	-4	-5	1	1	1	6	1	-5	-25	-13	26	33	1	-41	-56	-14	64	45	24	-53	
{0, 2, 3, 4, 5, 8, 10}	1	1	1	1	-4	-5	-6	9	1	6	1	-5	1	-20	11	-7	1	-23	-37	-34	-48	67	24	3	
{0, 2, 3, 4, 5, 8, 9, 10}	1	1	1	1	-4	-5	-6	1	1	6	1	7	1	-34	-19	1	35	13	-18	-74	-69	1	24	55	
{0, 2, 3, 4, 5, 7, 10}	1	1	1	1	-4	1	1	1	1	-4	12	1	1	1	11	17	1	1	-18	-24	22	12	24	-23	
{0, 2, 3, 4, 5, 7, 9, 10}	1	1	1	1	-4	1	1	-7	1	6	12	1	-12	-27	-4	25	18	1	1	-14	-20	-10	24	41	
{0, 2, 3, 4, 5, 7, 8, 10}	1	1	1	1	-4	1	-6	1	-8	6	1	1	1	-34	11	-15	18	-8	1	6	-27	23	-45	49	
{0, 2, 3, 4, 5, 7, 8, 9, 10}	1	1	1	1	-4	1	-6	-7	-8	-4	1	1	14	-6	-19	-39	-33	10	20	16	-6	-21	-45	-79	
{0, 2, 3, 4, 5, 6, 10}	1	1	1	1	1	-5	-6	1	1	1	12	-5	-25	-6	1	-15	35	13	-37	-19	-6	-10	24	43	
{0, 2, 3, 4, 5, 6, 9, 10}	1	1	1	1	1	-5	-6	-7	1	11	12	19	-12	-34	-14	9	18	49	20	-29	-90	-76	-22	83	
{0, 2, 3, 4, 5, 6, 8, 10}	1	1	1	1	1	-5	1	1	-8	1	12	-5	1	-13	-14	1	18	-14	1	21	-20	-10	24	-29	
{0, 2, 3, 4, 5, 6, 8, 9, 10}	1	1	1	1	1	-5	1	-7	-8	1	1	7	27	-13	-29	-23	-16	4	39	21	22	1	-68	-73	
{0, 2, 3, 4, 5, 6, 7, 10}	1	1	1	1	1	1	-6	-7	-8	11	12	13	1	-6	1	-23	1	10	39	11	-6	-32	-45	-19	
{0, 2, 3, 4, 5, 6, 7, 9, 10}	1	1	1	1	1	1	-6	1	-8	1	1	13	14	-20	-14	-15	1	-8	20	21	15	1	-45	-35	
{0, 2, 3, 4, 5, 6, 7, 8, 10}	1	1	1	1	1	1	1	-7	1	1	1	1	1	-13	1	-7	1	1	1	1	1	1	1	-7	
{0, 2, 3, 4, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	1	1	1	-9	-10	1	14	1	1	1	1	1	1	-9	-20	-10	24	25	
{0, 1, 10}	1	1	-2	-3	1	4	-6	-3	-2	1	1	0	1	-6	-17	-3	18	76	1	-123	12	1	-45	48	
{0, 1, 9, 10}	1	1	-2	-3	1	-2	1	-3	-2	1	1	-6	-12	-13	-2	-3	1	-2	1	-3	-2	1	1	-6	
{0, 1, 8, 10}	1	1	1	-3	1	1	-6	-3	1	1	12	-3	-38	8	16	-3	-16	1	20	-23	-90	-10	70	93	
{0, 1, 8, 9, 10}	1	1	1	-3	-4	-5	1	-3	1	-4	1	3	1	1	-4	-3	1	-23	39	-8	1	-21	24	-21	
{0, 1, 7, 10}	1	1	-2	1	1	4	-6	1	7	1	12	-8	-12	8	-2	1	-16	13	1	-19	-9	-32	70	-32	
{0, 1, 7, 9, 10}	1	1	-2	1	-4	-2	1	1	7	-4	-10	10	14	-27	-7	-15	1	25	1	-44	-2	34	-22	-86	
{0, 1, 7, 8, 10}	1	1	1	1	-4	1	-6	1	1	-4	-10	25	1	8	-19	-15	1	19	1	-64	-6	78	47	-143	
{0, 1, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-17	1	1	16	1	1	-23	1	21	1	1	-22	-17	
{0, 1, 6, 10}	1	1	-2	-3	1	4	8	-3	7	11	12	-12	-12	-20	-2	-3	-50	13	20	-93	-100	-10	93	84	
{0, 1, 6, 9, 10}	1	1	-2	-3	1	-2	1	-3	7	1	1	18	14	1	-2	29	18	7	-18	-23	19	45	-22	-78	
{0, 1, 6, 8, 10}	1	1	1	-3	1	1	8	-3	-8	1	1	-3	14	-20	1	-19	1	-8	1	-43	71	1	-45	-3	
{0, 1, 6, 8, 9, 10}	1	1	1	-3	-4	-5	1	-3	-8	-4	1	-21	1	15	26	13	-16	-14	39	52	-41	-87	-68	99	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 6, 7, 10}	1	1	-2	1	1	4	8	1	-11	1	-10	4	1	-20	-2	1	1	-5	-18	-19	47	-10	-22	4	
{0, 1, 6, 7, 9, 10}	1	1	-2	1	-4	-2	1	1	-11	-14	-10	-26	14	15	-7	-15	-50	-47	20	6	-149	-142	-68	-50	
{0, 1, 6, 7, 8, 10}	1	1	1	1	-4	1	8	1	1	-14	-10	-11	14	-6	26	1	-33	19	39	6	-13	-142	-22	85	
{0, 1, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	-12	-13	1	17	18	-5	-18	-19	1	23	24	-5	
{0, 1, 5, 10}	1	1	1	-3	1	1	1	-3	1	11	12	-3	-12	1	1	13	-16	1	-18	-53	-20	-10	24	69	
{0, 1, 5, 9, 10}	1	1	1	-3	1	-5	1	-3	1	1	1	-9	1	1	1	-3	1	-41	1	-3	1	45	47	-9	
{0, 1, 5, 8, 10}	1	1	1	-3	1	-5	1	-3	-8	1	-10	3	1	1	1	-3	18	-14	-18	37	106	144	47	-93	
{0, 1, 5, 8, 9, 10}	1	1	1	-3	-4	1	1	-3	-8	-14	-10	-3	-12	1	-4	-3	18	10	20	-18	-41	-54	-45	-51	
{0, 1, 5, 7, 10}	1	1	1	1	1	1	1	9	-8	1	-10	1	14	1	1	-7	52	-8	-56	41	85	12	-22	-111	
{0, 1, 5, 7, 9, 10}	1	1	1	1	-4	-5	1	9	-8	-4	-10	-17	14	1	11	-55	-16	4	39	16	-167	-120	-45	183	
{0, 1, 5, 7, 8, 10}	1	1	1	1	-4	-5	1	9	1	-14	-21	-17	1	29	11	-55	-50	49	96	26	-125	-175	-45	159	
{0, 1, 5, 7, 8, 9, 10}	1	1	1	1	1	1	1	9	1	1	1	-23	-25	-13	1	9	1	-17	-37	21	64	67	47	-39	
{0, 1, 5, 6, 10}	1	1	1	-3	1	1	1	5	1	1	1	9	14	1	31	-27	1	19	20	-43	1	-21	1	-7	
{0, 1, 5, 6, 9, 10}	1	1	1	-3	1	-5	-6	5	1	1	1	3	1	-6	16	5	1	-41	20	-3	-6	1	1	-13	
{0, 1, 5, 6, 8, 10}	1	1	1	-3	1	-5	1	5	1	-9	-10	-21	1	1	1	-59	-33	-5	1	-33	-62	-98	-45	-13	
{0, 1, 5, 6, 8, 9, 10}	1	1	1	-3	-4	1	-6	5	1	6	12	-15	1	-6	11	21	18	1	-37	2	15	56	24	-31	
{0, 1, 5, 6, 7, 10}	1	1	1	1	1	1	1	1	1	1	1	-11	14	1	46	-15	-33	1	39	41	-41	-43	-22	-11	
{0, 1, 5, 6, 7, 9, 10}	1	1	1	1	-4	-5	-6	1	1	-4	1	-17	1	-6	-4	17	-16	-23	-37	-4	15	-21	1	-89	
{0, 1, 5, 6, 7, 8, 10}	1	1	1	1	-4	-5	1	1	1	6	1	-5	-25	-13	26	33	1	-41	-56	-14	64	45	24	-53	
{0, 1, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	-6	1	1	1	1	13	1	-6	-14	1	1	1	20	1	-6	-21	1	-11	
{0, 1, 4, 10}	1	1	-2	-3	1	4	1	-3	7	1	12	-12	-12	1	-2	-3	-33	31	20	-43	-2	-10	24	-36	
{0, 1, 4, 9, 10}	1	1	-2	-3	1	-2	1	-3	7	1	1	18	14	1	-2	29	18	7	-18	-23	19	45	-22	-78	
{0, 1, 4, 8, 10}	1	1	1	-3	-4	1	1	-3	-8	-4	1	-3	1	1	-19	-3	18	-8	-18	-48	85	1	-22	-51	
{0, 1, 4, 8, 9, 10}	1	1	1	-3	-4	-5	1	-3	-8	-14	-10	-21	-12	1	11	-19	1	-32	1	-38	-62	-98	-22	-21	
{0, 1, 4, 7, 10}	1	1	-2	1	-4	4	1	9	-2	-4	1	4	1	-13	-7	-23	1	4	1	-4	-23	45	-22	12	
{0, 1, 4, 7, 9, 10}	1	1	-2	1	-4	-2	1	9	-2	-14	-10	-2	1	29	23	-23	1	-2	20	6	-86	-76	1	54	
{0, 1, 4, 7, 8, 10}	1	1	1	1	1	1	1	9	1	1	1	1	-12	15	1	-7	-33	19	39	-39	-20	1	24	-39	
{0, 1, 4, 7, 8, 9, 10}	1	1	1	1	1	-5	1	9	1	1	1	-5	-12	1	16	-7	1	-5	-37	41	1	23	-22	3	
{0, 1, 4, 6, 10}	1	1	-2	-3	1	4	1	-3	-11	1	-10	-12	1	1	-2	-3	18	67	1	-43	19	78	1	-108	
{0, 1, 4, 6, 9, 10}	1	1	-2	-3	1	-2	-6	-3	-11	-9	-10	-30	-12	-6	-2	-67	-50	25	39	7	-135	-120	-68	-78	
{0, 1, 4, 6, 8, 10}	1	1	1	-3	-4	1	1	-3	1	-4	1	-15	1	1	26	-19	-33	-17	39	-8	1	-43	-22	-39	
{0, 1, 4, 6, 8, 9, 10}	1	1	1	-3	-4	-5	-6	-3	1	6	12	-9	-25	-20	26	45	1	-41	-37	42	99	34	-22	-57	
{0, 1, 4, 6, 7, 10}	1	1	-2	1	-4	4	1	1	7	-4	-10	4	-12	15	8	1	-33	-23	20	-4	19	-10	-45	28	
{0, 1, 4, 6, 7, 9, 10}	1	1	-2	1	-4	-2	-6	1	7	6	1	10	-12	-6	23	33	1	-47	-37	-14	12	45	24	-62	
{0, 1, 4, 6, 7, 8, 10}	1	1	1	1	1	1	1	1	10	1	12	1	1	-13	31	17	-33	-80	-37	1	64	34	24	-47	
{0, 1, 4, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	-6	1	10	11	12	7	-12	-34	1	33	35	22	-18	-89	-90	12	116	127	
{0, 1, 4, 5, 10}	1	1	1	-3	1	1	1	5	1	1	-10	21	14	15	1	-11	35	19	-18	-23	1	-10	47	-43	
{0, 1, 4, 5, 9, 10}	1	1	1	-3	1	-5	-6	5	1	1	1	3	1	-6	16	5	1	-41	20	-3	-6	1	1	-13	
{0, 1, 4, 5, 8, 10}	1	1	1	-3	-4	-5	1	5	1	-4	-10	-21	-12	1	11	-59	-50	31	77	-28	-41	-10	47	35	
{0, 1, 4, 5, 8, 9, 10}	1	1	1	-3	-4	1	-6	5	1	-4	1	-3	1	-6	11	-11	1	-17	1	-8	-6	23	-22	5	
{0, 1, 4, 5, 7, 10}	1	1	1	1	-4	1	1	1	1	-4	-10	1	1	1	-4	1	-16	19	-18	-4	1	-32	24	1	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 4, 5, 7, 9, 10}	1	1	1	1	-4	-5	-6	1	1	6	12	-5	1	8	11	49	1	-41	-37	-14	15	12	47	-5	
{0, 1, 4, 5, 7, 8, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	-12	-13	46	33	-16	-32	-18	21	64	23	-22	-101	
{0, 1, 4, 5, 7, 8, 9, 10}	1	1	1	1	1	1	-6	1	10	11	12	1	-12	-20	-14	33	35	10	-18	-69	-69	-10	93	121	
{0, 1, 4, 5, 6, 10}	1	1	1	-3	1	1	-6	-3	1	1	1	-27	-12	-6	16	-19	1	19	1	-3	-6	1	1	-27	
{0, 1, 4, 5, 6, 9, 10}	1	1	1	-3	1	-5	1	-3	1	1	1	-21	1	1	1	-3	1	-23	1	-3	1	1	1	-21	
{0, 1, 4, 5, 6, 8, 10}	1	1	1	-3	-4	-5	-6	-3	1	6	1	-9	-25	-6	11	13	-16	-23	-37	-18	-6	1	-22	-57	
{0, 1, 4, 5, 6, 8, 9, 10}	1	1	1	-3	-4	1	1	-3	1	6	12	9	1	1	-4	29	18	19	1	2	1	-10	1	9	
{0, 1, 4, 5, 6, 7, 10}	1	1	1	1	-4	1	-6	-7	10	-4	1	1	-12	-6	11	-7	1	-26	20	-4	-27	45	-45	17	
{0, 1, 4, 5, 6, 7, 9, 10}	1	1	1	1	-4	-5	1	-7	10	6	1	7	-12	1	11	9	35	-14	-18	6	-20	23	24	-25	
{0, 1, 4, 5, 6, 7, 8, 10}	1	1	1	1	1	-5	-6	-7	1	11	12	19	-12	-34	-14	9	18	49	20	-29	-90	-76	-22	83	
{0, 1, 4, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	1	-7	1	1	1	13	1	1	-14	-7	1	1	1	21	1	1	-22	-19	
{0, 1, 3, 10}	1	1	-2	1	1	-2	-6	1	7	1	12	-2	-12	8	28	1	-16	7	20	-19	-51	12	47	-50	
{0, 1, 3, 9, 10}	1	1	-2	1	-4	-2	1	1	7	-4	-10	10	14	-27	-7	-15	1	25	1	-44	-2	34	-22	-86	
{0, 1, 3, 8, 10}	1	1	1	1	1	-5	-6	1	-8	1	1	-5	14	8	-14	1	1	-14	-18	-19	36	45	1	-53	
{0, 1, 3, 8, 9, 10}	1	1	1	1	-4	-5	1	1	-8	-4	1	-17	1	15	26	17	-16	-14	1	76	-20	-43	-68	-17	
{0, 1, 3, 7, 10}	1	1	-2	1	-4	-2	-6	1	-11	-4	1	10	14	8	-37	-15	18	25	-37	-44	33	45	47	-86	
{0, 1, 3, 7, 9, 10}	1	1	-2	1	1	-2	1	1	-11	-9	-10	-26	1	29	-2	1	1	-47	-18	-9	-170	-120	-22	166	
{0, 1, 3, 7, 8, 10}	1	1	1	1	-4	-5	-6	1	1	-14	-10	-17	1	-6	-4	1	1	13	20	6	-111	-142	-68	31	
{0, 1, 3, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-17	-25	-27	-14	17	35	-5	-37	-19	22	45	47	-17	
{0, 1, 3, 6, 10}	1	1	-2	1	1	-2	8	9	-2	1	-10	10	14	-20	-47	-23	52	-38	-37	-39	47	144	24	-102	
{0, 1, 3, 6, 9, 10}	1	1	-2	1	-4	-2	1	9	-2	-14	-10	-2	1	29	23	-23	1	-2	20	6	-86	-76	1	54	
{0, 1, 3, 6, 8, 10}	1	1	1	1	1	-5	8	9	1	1	-10	-5	14	-6	1	-23	-33	31	58	-39	-34	-10	1	123	
{0, 1, 3, 6, 8, 9, 10}	1	1	1	1	-4	-5	1	9	1	-4	1	-5	-25	1	26	9	18	-41	-56	76	85	1	-91	-69	
{0, 1, 3, 6, 7, 10}	1	1	-2	1	-4	-2	8	1	7	-4	-10	-26	-12	-6	-7	-15	-33	-11	58	76	5	-10	-68	-2	
{0, 1, 3, 6, 7, 9, 10}	1	1	-2	1	1	-2	1	1	7	1	12	10	1	-13	13	17	-16	-47	-56	-19	40	34	24	10	
{0, 1, 3, 6, 7, 8, 10}	1	1	1	1	-4	-5	8	1	10	6	12	-5	-12	-20	26	33	1	-104	-75	-54	134	56	24	-125	
{0, 1, 3, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	10	11	12	7	1	-27	1	1	18	4	-18	-69	-41	-32	47	55	
{0, 1, 3, 5, 10}	1	1	1	1	1	-5	1	9	-8	1	1	-5	14	-13	1	-23	52	-14	-18	1	22	45	-45	-21	
{0, 1, 3, 5, 9, 10}	1	1	1	1	-4	-5	1	9	-8	-4	-10	-17	14	1	11	-55	-16	4	39	16	-167	-120	-45	183	
{0, 1, 3, 5, 8, 10}	1	1	1	1	1	1	1	9	1	1	-10	1	1	1	46	-23	-50	1	39	1	1	-10	-22	9	
{0, 1, 3, 5, 8, 9, 10}	1	1	1	1	-4	1	1	9	1	6	12	-11	-12	1	26	25	-16	-17	-37	86	43	56	-22	-75	
{0, 1, 3, 5, 7, 10}	1	1	1	1	-4	-5	1	1	1	-4	1	-5	14	15	11	-31	-16	67	20	-64	-41	45	24	-53	
{0, 1, 3, 5, 7, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-17	1	-13	1	33	1	-59	1	121	85	-65	-45	31	
{0, 1, 3, 5, 7, 8, 10}	1	1	1	1	-4	1	1	1	1	-4	1	1	-12	-27	-4	33	18	-17	-37	16	22	1	1	-47	
{0, 1, 3, 5, 7, 8, 9, 10}	1	1	1	1	1	1	1	1	1	1	1	1	-12	-27	-29	1	35	55	1	-59	-41	23	47	25	
{0, 1, 3, 5, 6, 10}	1	1	1	1	1	-5	1	1	1	-9	-10	-17	1	1	1	-47	-67	31	1	31	-20	-54	-45	-17	
{0, 1, 3, 5, 6, 9, 10}	1	1	1	1	-4	-5	-6	1	1	6	12	-5	1	8	11	49	1	-41	-37	-14	15	12	47	-5	
{0, 1, 3, 5, 6, 8, 10}	1	1	1	1	1	1	1	1	10	1	1	1	-12	-13	1	17	18	-26	-18	21	1	23	1	-23	
{0, 1, 3, 5, 6, 8, 9, 10}	1	1	1	1	-4	1	-6	1	10	6	12	1	1	-20	-34	33	69	28	-37	-94	-27	12	70	73	
{0, 1, 3, 5, 6, 7, 10}	1	1	1	1	-4	-5	1	-7	10	6	1	-5	-25	1	41	-7	-33	-68	-37	66	1	23	1	-157	
{0, 1, 3, 5, 6, 7, 9, 10}	1	1	1	1	1	-5	-6	-7	10	1	12	7	1	-34	-14	25	69	22	1	-39	-48	-32	47	71	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 3, 5, 6, 7, 8, 10}	1	1	1	1	-4	1	1	-7	1	6	12	1	-12	-27	-4	25	18	1	1	-14	-20	-10	24	41	
{0, 1, 3, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	-6	-7	1	1	1	13	27	-6	-29	-23	1	1	20	61	36	-43	-68	-43	
{0, 1, 3, 4, 10}	1	1	-2	1	-4	-2	1	1	-11	-4	-10	10	14	-27	-37	-15	18	-11	-18	-64	-2	12	1	-86	
{0, 1, 3, 4, 9, 10}	1	1	-2	1	-4	-2	1	1	-11	-14	-10	-26	14	15	-7	-15	-50	-47	20	6	-149	-142	-68	-50	
{0, 1, 3, 4, 8, 10}	1	1	1	1	-4	-5	1	1	1	-14	-10	-17	1	29	11	-63	-33	31	77	46	-125	-186	-22	127	
{0, 1, 3, 4, 8, 9, 10}	1	1	1	1	-4	-5	1	1	1	6	12	-17	-12	-13	11	33	18	-41	-56	-14	85	78	47	-113	
{0, 1, 3, 4, 7, 10}	1	1	-2	1	1	-2	1	1	7	1	1	-2	1	1	13	17	-16	7	20	21	-2	1	1	-2	
{0, 1, 3, 4, 7, 9, 10}	1	1	-2	1	1	-2	1	1	7	1	12	10	1	-13	13	17	-16	-47	-56	-19	40	34	24	10	
{0, 1, 3, 4, 7, 8, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	1	-27	16	1	18	-50	20	1	43	-21	-22	-5	
{0, 1, 3, 4, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	10	11	12	7	-12	-27	-14	17	18	4	-37	-69	-20	12	47	79	
{0, 1, 3, 4, 6, 10}	1	1	-2	1	-4	-2	1	1	7	-14	-21	-26	-12	29	-7	-31	-50	-29	20	26	-23	-153	-160	-2	
{0, 1, 3, 4, 6, 9, 10}	1	1	-2	1	-4	-2	-6	1	7	6	1	10	-12	-6	23	33	1	-47	-37	-14	12	45	24	-62	
{0, 1, 3, 4, 6, 8, 10}	1	1	1	1	-4	-5	1	1	10	-4	1	-17	-12	-13	26	33	1	-68	-37	-4	85	67	1	-137	
{0, 1, 3, 4, 6, 8, 9, 10}	1	1	1	1	-4	-5	-6	1	10	6	12	7	-12	-34	-19	17	69	22	-56	-134	-90	56	116	103	
{0, 1, 3, 4, 6, 7, 10}	1	1	-2	1	1	-2	1	-7	-2	1	1	10	1	-13	28	9	1	-2	-18	1	-2	1	24	2	
{0, 1, 3, 4, 6, 7, 9, 10}	1	1	-2	1	1	-2	-6	-7	-2	1	1	-2	1	-20	-47	-23	1	-2	1	1	-9	-21	-22	-10	
{0, 1, 3, 4, 6, 7, 8, 10}	1	1	1	1	1	-5	1	-7	1	1	1	7	1	-27	-14	9	18	13	-18	-19	-20	1	24	23	
{0, 1, 3, 4, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	-6	-7	1	1	1	-5	1	-6	-14	-7	1	-5	1	1	-6	-21	-22	-13	
{0, 1, 3, 4, 5, 10}	1	1	1	1	-4	-5	1	1	1	-14	-10	-17	14	29	11	-47	-16	-5	39	46	-20	-98	-45	79	
{0, 1, 3, 4, 5, 9, 10}	1	1	1	1	-4	-5	-6	1	1	-4	1	-17	1	-6	-4	17	-16	-23	-37	-4	15	-21	1	-89	
{0, 1, 3, 4, 5, 8, 10}	1	1	1	1	-4	1	1	1	1	6	12	-11	-25	-13	41	49	-33	-71	-37	26	64	34	-22	-59	
{0, 1, 3, 4, 5, 8, 9, 10}	1	1	1	1	-4	1	-6	1	1	6	12	1	1	-6	-4	33	18	19	-37	-34	15	12	47	-23	
{0, 1, 3, 4, 5, 7, 10}	1	1	1	1	1	-5	1	-7	10	1	12	-5	1	1	46	-7	18	-32	1	1	43	-10	47	-109	
{0, 1, 3, 4, 5, 7, 9, 10}	1	1	1	1	1	-5	-6	-7	10	1	12	7	1	-34	-14	25	69	22	1	-39	-48	-32	47	71	
{0, 1, 3, 4, 5, 7, 8, 10}	1	1	1	1	1	1	1	-7	1	1	1	1	1	-27	-14	9	18	19	1	-19	-20	-21	1	17	
{0, 1, 3, 4, 5, 7, 8, 9, 10}	1	1	1	1	1	1	-6	-7	1	1	1	13	14	-6	-44	-39	-16	19	58	61	15	-65	-114	-91	
{0, 1, 3, 4, 5, 6, 10}	1	1	1	1	-4	-5	-6	-7	10	6	1	-17	-38	-6	26	-7	1	-32	-56	-34	-6	67	24	-73	
{0, 1, 3, 4, 5, 6, 9, 10}	1	1	1	1	-4	-5	1	-7	10	6	1	7	-12	1	11	9	35	-14	-18	6	-20	23	24	-25	
{0, 1, 3, 4, 5, 6, 8, 10}	1	1	1	1	-4	1	-6	-7	1	6	12	1	-12	-20	-19	9	18	19	20	-34	-48	-32	1	65	
{0, 1, 3, 4, 5, 6, 8, 9, 10}	1	1	1	1	-4	1	1	-7	1	-4	1	13	1	1	-34	-39	1	1	20	16	-20	1	-45	-43	
{0, 1, 3, 4, 5, 6, 7, 10}	1	1	1	1	1	-5	-6	1	1	11	12	7	-12	-20	16	33	18	13	-18	-29	-27	12	47	55	
{0, 1, 3, 4, 5, 6, 7, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	1	-13	-29	-15	1	-5	1	1	1	1	1	-5	
{0, 1, 3, 4, 5, 6, 7, 8, 10}	1	1	1	1	1	1	-6	1	-8	1	1	13	14	-20	-14	-15	1	-8	20	21	15	1	-45	-35	
{0, 1, 3, 4, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	1	1	-8	-9	-10	1	14	15	1	1	1	-8	-18	-29	-20	12	47	49	
{0, 1, 2, 10}	1	1	1	-3	1	1	1	-3	1	1	1	9	-12	1	16	-3	1	1	-18	-3	-20	1	1	-15	
{0, 1, 2, 9, 10}	1	1	1	-3	-4	-5	1	-3	1	-4	1	3	1	1	-4	-3	1	-23	39	-8	1	-21	24	-21	
{0, 1, 2, 8, 10}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-3	14	15	-19	-35	1	37	-18	-48	-20	34	47	-27	
{0, 1, 2, 8, 9, 10}	1	1	1	-3	1	-5	1	-3	1	1	1	-21	1	1	1	-3	1	-5	1	-3	1	-21	-45	-93	
{0, 1, 2, 7, 10}	1	1	1	1	1	1	1	1	-8	1	1	25	14	-27	-29	17	52	10	-75	-39	85	45	-22	-143	
{0, 1, 2, 7, 9, 10}	1	1	1	1	-4	-5	1	1	-8	-4	1	-17	1	15	26	17	-16	-14	1	76	-20	-43	-68	-17	
{0, 1, 2, 7, 8, 10}	1	1	1	1	-4	1	1	1	1	-14	-10	-11	1	1	26	1	-50	-17	1	26	1	-54	1	-11	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 2, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	1	1	1	-15	18	-5	1	1	-20	1	1	-5	
{0, 1, 2, 6, 10}	1	1	1	-3	1	1	1	-3	-8	1	1	-3	14	1	-14	-3	35	-8	-18	-23	22	45	-22	-51	
{0, 1, 2, 6, 9, 10}	1	1	1	-3	-4	-5	1	-3	-8	-14	-10	-21	-12	1	11	-19	1	-32	1	-38	-62	-98	-22	-21	
{0, 1, 2, 6, 8, 10}	1	1	1	-3	-4	1	1	-3	1	-4	-10	-15	14	1	-4	-19	-33	-17	39	-8	-41	-120	-45	57	
{0, 1, 2, 6, 8, 9, 10}	1	1	1	-3	1	-5	1	-3	1	1	1	-9	-12	1	1	-3	1	-23	-18	-3	1	1	-22	-81	
{0, 1, 2, 6, 7, 10}	1	1	1	1	1	1	1	1	1	1	1	-11	14	1	16	-31	-16	1	58	-39	-41	-21	70	13	
{0, 1, 2, 6, 7, 9, 10}	1	1	1	1	-4	-5	1	1	1	6	12	-17	-12	-13	11	33	18	-41	-56	-14	85	78	47	-113	
{0, 1, 2, 6, 7, 8, 10}	1	1	1	1	-4	1	1	1	1	-4	1	-11	1	1	11	1	-16	-35	-18	-4	22	1	-22	-35	
{0, 1, 2, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	7	1	1	1	-15	1	13	1	1	1	-21	1	7	
{0, 1, 2, 5, 10}	1	1	1	-3	1	-5	1	-3	-8	1	1	15	1	1	1	-3	1	-14	-18	-3	22	1	24	-57	
{0, 1, 2, 5, 9, 10}	1	1	1	-3	-4	1	1	-3	-8	-14	-10	-3	-12	1	-4	-3	18	10	20	-18	-41	-54	-45	-51	
{0, 1, 2, 5, 8, 10}	1	1	1	-3	-4	-5	1	-3	1	-14	-10	-21	14	43	11	-67	-33	49	115	-18	-83	-120	24	147	
{0, 1, 2, 5, 8, 9, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-15	1	1	1	-19	1	1	1	37	85	-21	-45	-135	
{0, 1, 2, 5, 7, 10}	1	1	1	1	1	-5	1	9	1	-9	-10	-5	14	15	1	-55	-16	31	39	11	-62	-54	24	99	
{0, 1, 2, 5, 7, 9, 10}	1	1	1	1	-4	1	1	9	1	6	12	-11	-12	1	26	25	-16	-17	-37	86	43	56	-22	-75	
{0, 1, 2, 5, 7, 8, 10}	1	1	1	1	-4	-5	1	9	10	6	1	-5	1	-13	26	9	-33	-50	20	46	43	-21	-45	-21	
{0, 1, 2, 5, 7, 8, 9, 10}	1	1	1	1	1	1	1	9	10	11	12	13	1	1	16	-7	18	10	-37	-89	-104	-98	-91	-51	
{0, 1, 2, 5, 6, 10}	1	1	1	-3	1	-5	-6	5	1	1	1	-21	-12	-6	46	-27	-16	-23	39	-3	-6	23	-22	-13	
{0, 1, 2, 5, 6, 9, 10}	1	1	1	-3	-4	1	-6	5	1	-4	1	-3	1	-6	11	-11	1	-17	1	-8	-6	23	-22	5	
{0, 1, 2, 5, 6, 8, 10}	1	1	1	-3	-4	-5	-6	5	10	6	12	-9	-12	-6	41	21	-33	-68	-18	42	57	12	-22	-97	
{0, 1, 2, 5, 6, 8, 9, 10}	1	1	1	-3	1	1	-6	5	10	11	12	9	1	-6	1	5	18	-8	-37	-53	-48	-10	24	17	
{0, 1, 2, 5, 6, 7, 10}	1	1	1	1	1	-5	-6	1	1	1	1	-5	1	-20	1	33	-16	-23	-18	21	-6	1	24	-29	
{0, 1, 2, 5, 6, 7, 9, 10}	1	1	1	1	-4	1	-6	1	1	6	12	1	1	-6	-4	33	18	19	-37	-34	15	12	47	-23	
{0, 1, 2, 5, 6, 7, 8, 10}	1	1	1	1	-4	-5	-6	1	1	6	1	7	1	-34	-19	1	35	13	-18	-74	-69	1	24	55	
{0, 1, 2, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	-6	1	1	1	1	13	1	-6	1	-15	1	1	20	1	-6	1	-22	-11	
{0, 1, 2, 4, 10}	1	1	1	-3	-4	1	1	-3	-8	-4	-10	-3	14	-13	-19	-19	18	-8	-18	-28	1	12	-22	-51	
{0, 1, 2, 4, 9, 10}	1	1	1	-3	-4	-5	1	-3	-8	-4	1	-21	1	15	26	13	-16	-14	39	52	-41	-87	-68	99	
{0, 1, 2, 4, 8, 10}	1	1	1	-3	1	1	1	-3	1	-9	-10	-15	1	1	31	-19	-33	-35	58	47	-62	-120	1	9	
{0, 1, 2, 4, 8, 9, 10}	1	1	1	-3	1	-5	1	-3	1	1	1	-9	-12	1	1	-3	1	-23	-18	-3	1	1	-22	-81	
{0, 1, 2, 4, 7, 10}	1	1	1	1	-4	1	1	9	1	-14	-10	1	14	29	-4	-23	-33	1	58	6	-41	-76	24	129	
{0, 1, 2, 4, 7, 9, 10}	1	1	1	1	-4	-5	1	9	1	-4	1	-5	-25	1	26	9	18	-41	-56	76	85	1	-91	-69	
{0, 1, 2, 4, 7, 8, 10}	1	1	1	1	1	1	1	9	10	1	12	1	-12	1	16	-7	-16	-44	-75	-39	43	56	1	-15	
{0, 1, 2, 4, 7, 8, 9, 10}	1	1	1	1	1	-5	1	9	10	11	12	19	1	1	1	-23	-16	4	-56	-69	-104	-98	-68	3	
{0, 1, 2, 4, 6, 10}	1	1	1	-3	-4	1	-6	-3	1	-4	-10	-15	1	-6	11	-19	-16	1	20	-8	-27	-32	1	-39	
{0, 1, 2, 4, 6, 9, 10}	1	1	1	-3	-4	-5	-6	-3	1	6	12	-9	-25	-20	26	45	1	-41	-37	42	99	34	-22	-57	
{0, 1, 2, 4, 6, 8, 10}	1	1	1	-3	1	1	-6	-3	1	1	1	-3	1	-20	1	-3	1	1	1	-3	-6	1	1	-3	
{0, 1, 2, 4, 6, 8, 9, 10}	1	1	1	-3	1	-5	-6	-3	1	1	1	-9	-12	-20	1	-3	1	-5	-56	-63	-6	1	1	-33	
{0, 1, 2, 4, 6, 7, 10}	1	1	1	1	-4	1	-6	1	10	6	12	1	-25	-20	26	33	1	-62	-56	6	36	78	47	-23	
{0, 1, 2, 4, 6, 7, 9, 10}	1	1	1	1	-4	-5	-6	1	10	6	12	7	-12	-34	-19	17	69	22	-56	-134	-90	56	116	103	
{0, 1, 2, 4, 6, 7, 8, 10}	1	1	1	1	1	1	-6	1	1	1	12	1	1	-6	-14	-15	35	37	-37	-39	15	12	1	25	
{0, 1, 2, 4, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	-6	1	1	1	1	7	14	-6	1	-15	-16	13	39	21	-6	-21	-45	-17	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 2, 4, 5, 10}	1	1	1	-3	-4	-5	-6	5	1	-14	-10	-21	14	8	11	-59	-33	13	58	2	-90	-120	-22	107	
{0, 1, 2, 4, 5, 9, 10}	1	1	1	-3	-4	1	-6	5	1	6	12	-15	1	-6	11	21	18	1	-37	2	15	56	24	-31	
{0, 1, 2, 4, 5, 8, 10}	1	1	1	-3	1	-5	-6	5	10	1	12	-9	-25	-6	91	21	-33	-68	-18	37	120	78	-68	-193	
{0, 1, 2, 4, 5, 8, 9, 10}	1	1	1	-3	1	1	-6	5	10	11	12	9	1	-6	1	5	18	-8	-37	-53	-48	-10	24	17	
{0, 1, 2, 4, 5, 7, 10}	1	1	1	1	-4	-5	-6	1	10	6	1	-5	-12	-6	26	33	1	-50	-37	6	57	45	1	-101	
{0, 1, 2, 4, 5, 7, 9, 10}	1	1	1	1	-4	1	-6	1	10	6	12	1	1	-20	-34	33	69	28	-37	-94	-27	12	70	73	
{0, 1, 2, 4, 5, 7, 8, 10}	1	1	1	1	1	-5	-6	1	1	1	1	7	1	-34	-14	1	35	31	1	-59	-48	1	47	55	
{0, 1, 2, 4, 5, 7, 8, 9, 10}	1	1	1	1	1	1	-6	1	1	1	1	13	14	-6	-29	-31	1	37	96	61	-27	-87	-91	-35	
{0, 1, 2, 4, 5, 6, 10}	1	1	1	-3	-4	-5	1	-3	1	-4	1	-9	-12	1	11	-3	-16	-23	1	-8	1	1	-22	-33	
{0, 1, 2, 4, 5, 6, 9, 10}	1	1	1	-3	-4	1	1	-3	1	6	12	9	1	1	-4	29	18	19	1	2	1	-10	1	9	
{0, 1, 2, 4, 5, 6, 8, 10}	1	1	1	-3	1	-5	1	-3	1	1	12	-9	1	-13	1	-19	18	-5	1	-23	1	-32	24	-9	
{0, 1, 2, 4, 5, 6, 8, 9, 10}	1	1	1	-3	1	1	1	-3	1	1	1	-3	1	-13	-29	-51	-33	-17	1	-3	1	1	1	-3	
{0, 1, 2, 4, 5, 6, 7, 10}	1	1	1	1	-4	-5	1	-7	1	6	1	19	-12	-27	11	9	35	13	-18	6	-20	-21	47	11	
{0, 1, 2, 4, 5, 6, 7, 9, 10}	1	1	1	1	-4	1	1	-7	1	-4	1	13	1	1	-34	-39	1	1	20	16	-20	1	-45	-43	
{0, 1, 2, 4, 5, 6, 7, 8, 10}	1	1	1	1	1	-5	1	-7	-8	1	1	7	27	-13	-29	-23	-16	4	39	21	22	1	-68	-73	
{0, 1, 2, 4, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	1	-7	-8	-9	-10	1	14	15	16	-7	-16	-26	-37	-29	1	34	70	65	
{0, 1, 2, 3, 10}	1	1	1	1	-4	-5	1	1	1	-4	1	-5	14	1	-4	17	1	-23	1	-4	22	1	-22	-5	
{0, 1, 2, 3, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-17	1	1	16	1	1	-23	1	21	1	1	-22	-17	
{0, 1, 2, 3, 8, 10}	1	1	1	1	-4	-5	1	1	1	-4	1	-5	14	15	-4	1	1	-23	20	-4	1	1	-22	19	
{0, 1, 2, 3, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	1	1	1	-15	18	-5	1	1	-20	1	1	-5	
{0, 1, 2, 3, 7, 10}	1	1	1	1	-4	-5	1	1	1	-14	-10	-17	1	29	11	-15	-16	-23	39	6	-62	-76	-68	55	
{0, 1, 2, 3, 7, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-17	-25	-27	-14	17	35	-5	-37	-19	22	45	47	-17	
{0, 1, 2, 3, 7, 8, 10}	1	1	1	1	-4	-5	1	1	1	6	12	-5	-12	-27	-4	33	18	-23	-37	-14	43	34	1	-29	
{0, 1, 2, 3, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	1	1	1	1	1	-5	1	1	1	-21	1	-5	
{0, 1, 2, 3, 6, 10}	1	1	1	1	-4	-5	1	9	1	-14	-10	-17	1	43	11	-23	-16	-5	39	66	-41	-142	-91	87	
{0, 1, 2, 3, 6, 9, 10}	1	1	1	1	1	-5	1	9	1	1	1	-5	-12	1	16	-7	1	-5	-37	41	1	23	-22	3	
{0, 1, 2, 3, 6, 8, 10}	1	1	1	1	-4	-5	1	9	10	6	12	-5	-25	-13	26	9	-16	-50	-94	26	64	78	24	-93	
{0, 1, 2, 3, 6, 8, 9, 10}	1	1	1	1	1	-5	1	9	10	11	12	19	1	1	1	-23	-16	4	-56	-69	-104	-98	-68	3	
{0, 1, 2, 3, 6, 7, 10}	1	1	1	1	-4	-5	1	1	10	-4	1	-17	-12	-13	41	17	1	-50	-37	16	85	45	1	-137	
{0, 1, 2, 3, 6, 7, 9, 10}	1	1	1	1	1	-5	1	1	10	11	12	7	-12	-27	-14	17	18	4	-37	-69	-20	12	47	79	
{0, 1, 2, 3, 6, 7, 8, 10}	1	1	1	1	-4	-5	1	1	1	6	12	7	1	-27	-34	1	35	31	-37	-74	-62	34	70	55	
{0, 1, 2, 3, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	7	1	1	1	1	-16	13	1	1	1	1	-22	7	
{0, 1, 2, 3, 5, 10}	1	1	1	1	-4	1	1	9	1	-4	1	1	14	1	-4	-23	1	19	20	-4	-41	-21	24	57	
{0, 1, 2, 3, 5, 9, 10}	1	1	1	1	1	1	1	9	1	1	1	-23	-25	-13	1	9	1	-17	-37	21	64	67	47	-39	
{0, 1, 2, 3, 5, 8, 10}	1	1	1	1	-4	1	1	9	10	-4	1	1	1	1	11	-7	-16	-8	1	-4	1	1	-22	-15	
{0, 1, 2, 3, 5, 8, 9, 10}	1	1	1	1	1	1	1	9	10	11	12	13	1	1	16	-7	18	10	-37	-89	-104	-98	-91	-51	
{0, 1, 2, 3, 5, 7, 10}	1	1	1	1	-4	1	1	1	1	6	12	1	-25	-13	11	33	18	-35	-37	6	22	12	1	25	
{0, 1, 2, 3, 5, 7, 9, 10}	1	1	1	1	1	1	1	1	1	1	1	1	-12	-27	-29	1	35	55	1	-59	-41	23	47	25	
{0, 1, 2, 3, 5, 7, 8, 10}	1	1	1	1	-4	1	1	1	1	6	12	1	-12	-27	11	33	18	-17	-37	-14	22	12	1	25	
{0, 1, 2, 3, 5, 7, 8, 9, 10}	1	1	1	1	1	1	1	1	1	1	1	1	1	-13	1	1	1	37	39	1	1	-21	-45	-23	
{0, 1, 2, 3, 5, 6, 10}	1	1	1	1	-4	1	-6	1	10	6	12	-23	-12	-6	26	33	1	-26	-75	-14	57	78	70	-95	

	Size of input, n:																								
Minterm (indices of 1's):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
{0, 1, 2, 3, 5, 6, 9, 10}	1	1	1	1	1	1	-6	1	10	11	12	1	-12	-20	-14	33	35	10	-18	-69	-69	-10	93	121	
{0, 1, 2, 3, 5, 6, 8, 10}	1	1	1	1	-4	1	-6	1	1	6	12	1	1	-34	-4	17	35	37	-37	-34	-48	12	47	49	
{0, 1, 2, 3, 5, 6, 8, 9, 10}	1	1	1	1	1	1	-6	1	1	1	1	13	14	-6	-29	-31	1	37	96	61	-27	-87	-91	-35	
{0, 1, 2, 3, 5, 6, 7, 10}	1	1	1	1	-4	1	-6	-7	1	6	12	13	-12	-20	-19	9	35	37	20	-34	-48	-54	1	77	
{0, 1, 2, 3, 5, 6, 7, 9, 10}	1	1	1	1	1	1	-6	-7	1	1	1	13	14	-6	-44	-39	-16	19	58	61	15	-65	-114	-91	
{0, 1, 2, 3, 5, 6, 7, 8, 10}	1	1	1	1	-4	1	-6	-7	-8	-4	1	1	14	-6	-19	-39	-33	10	20	16	-6	-21	-45	-79	
{0, 1, 2, 3, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	-6	-7	-8	-9	-10	1	14	8	1	-7	-33	-44	-37	-9	15	34	47	17	
{0, 1, 2, 3, 4, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	1	1	-14	1	18	-5	1	1	-20	1	24	-5	
{0, 1, 2, 3, 4, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	-12	-13	1	17	18	-5	-18	-19	1	23	24	-5	
{0, 1, 2, 3, 4, 8, 10}	1	1	1	1	1	-5	1	1	1	1	1	-5	-25	-13	16	17	18	-5	-37	-19	22	23	24	-5	
{0, 1, 2, 3, 4, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	7	1	1	1	-15	1	13	1	1	1	-21	1	7	
{0, 1, 2, 3, 4, 7, 10}	1	1	1	1	1	-5	1	1	10	1	1	-5	1	-13	16	1	1	-14	1	-19	22	1	24	-29	
{0, 1, 2, 3, 4, 7, 9, 10}	1	1	1	1	1	-5	1	1	10	11	12	7	1	-27	1	1	18	4	-18	-69	-41	-32	47	55	
{0, 1, 2, 3, 4, 7, 8, 10}	1	1	1	1	1	-5	1	1	1	11	12	19	1	-27	-29	17	18	31	1	-49	-62	-32	-22	43	
{0, 1, 2, 3, 4, 7, 8, 9, 10}	1	1	1	1	1	-5	1	1	1	1	1	7	1	1	1	1	-16	13	1	1	1	1	-22	7	
{0, 1, 2, 3, 4, 6, 10}	1	1	1	1	1	-5	-6	1	10	1	1	-17	-12	-6	31	17	1	-32	-37	-19	57	67	24	-89	
{0, 1, 2, 3, 4, 6, 9, 10}	1	1	1	1	1	-5	-6	1	10	11	12	7	-12	-34	1	33	35	22	-18	-89	-90	12	116	127	
{0, 1, 2, 3, 4, 6, 8, 10}	1	1	1	1	1	-5	-6	1	1	1	1	-5	1	-6	1	1	1	-5	1	1	-6	1	1	-5	
{0, 1, 2, 3, 4, 6, 8, 9, 10}	1	1	1	1	1	-5	-6	1	1	1	1	7	14	-6	1	-15	-16	13	39	21	-6	-21	-45	-17	
{0, 1, 2, 3, 4, 6, 7, 10}	1	1	1	1	1	-5	-6	-7	1	11	12	7	-12	-34	-14	9	35	49	20	-49	-90	-76	24	143	
{0, 1, 2, 3, 4, 6, 7, 9, 10}	1	1	1	1	1	-5	-6	-7	1	1	1	-5	1	-6	-14	-7	1	-5	1	1	-6	-21	-22	-13	
{0, 1, 2, 3, 4, 6, 7, 8, 10}	1	1	1	1	1	-5	-6	-7	-8	1	1	7	14	-20	-29	-23	-16	4	39	21	-6	-43	-91	-73	
{0, 1, 2, 3, 4, 6, 7, 8, 9, 10}	1	1	1	1	1	-5	-6	-7	-8	-9	-10	-5	1	-6	-14	-23	-33	-50	-37	-29	-27	-32	-45	-85	
{0, 1, 2, 3, 4, 5, 10}	1	1	1	1	1	1	-6	1	1	1	1	1	1	8	1	-15	1	1	1	1	15	1	-22	1	
{0, 1, 2, 3, 4, 5, 9, 10}	1	1	1	1	1	1	-6	1	1	1	1	13	1	-6	-14	1	1	1	20	1	-6	-21	1	-11	
{0, 1, 2, 3, 4, 5, 8, 10}	1	1	1	1	1	1	-6	1	1	11	12	13	-12	-34	1	1	18	19	20	-29	-69	-32	1	85	
{0, 1, 2, 3, 4, 5, 8, 9, 10}	1	1	1	1	1	1	-6	1	1	1	1	13	1	-6	1	-15	1	1	20	1	-6	1	-22	-11	
{0, 1, 2, 3, 4, 5, 7, 10}	1	1	1	1	1	1	-6	-7	1	11	12	1	1	-20	-14	-7	18	37	20	-9	-48	-54	-22	41	
{0, 1, 2, 3, 4, 5, 7, 9, 10}	1	1	1	1	1	1	-6	-7	1	1	1	13	27	-6	-29	-23	1	1	20	61	36	-43	-68	-43	
{0, 1, 2, 3, 4, 5, 7, 8, 10}	1	1	1	1	1	1	-6	-7	-8	1	1	13	14	-6	-14	-23	-16	-8	20	41	36	1	-45	-67	
{0, 1, 2, 3, 4, 5, 7, 8, 9, 10}	1	1	1	1	1	1	-6	-7	-8	-9	-10	1	14	8	1	-7	-33	-44	-37	-9	15	34	47	17	
{0, 1, 2, 3, 4, 5, 6, 10}	1	1	1	1	1	1	1	-7	1	1	1	1	-12	1	16	-7	1	1	1	1	-20	1	24	-7	
{0, 1, 2, 3, 4, 5, 6, 9, 10}	1	1	1	1	1	1	1	-7	1	1	1	13	1	1	-14	-7	1	1	1	21	1	1	-22	-19	
{0, 1, 2, 3, 4, 5, 6, 8, 10}	1	1	1	1	1	1	1	-7	-8	1	1	1	14	1	1	-7	-16	-8	1	1	22	23	1	-7	
{0, 1, 2, 3, 4, 5, 6, 8, 9, 10}	1	1	1	1	1	1	1	-7	-8	-9	-10	1	14	15	16	-7	-16	-26	-37	-29	1	34	70	65	
{0, 1, 2, 3, 4, 5, 6, 7, 10}	1	1	1	1	1	1	1	1	-8	1	1	13	1	-13	1	1	1	-8	1	1	22	1	-22	-11	
{0, 1, 2, 3, 4, 5, 6, 7, 9, 10}	1	1	1	1	1	1	1	1	-8	-9	-10	1	14	15	1	1	1	-8	-18	-29	-20	12	47	49	
{0, 1, 2, 3, 4, 5, 6, 7, 8, 10}	1	1	1	1	1	1	1	1	1	-9	-10	1	14	1	1	1	1	1	1	-9	-20	-10	24	25	
{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}	1	1	1	1	1	1	1	1	1	1	1	-11	1	1	1	1	1	1	1	1	1	1	1	-11	