9. The complexity class $\text{DP}$ is defined as follows:

$$\text{DP} = \{L_1 \cap L_2 : L_1 \in \text{NP} \text{ and } L_2 \in \text{coNP}\}.$$ 

Prove that the language $\text{EXACT-IND-SET} = \{(G, k) : G \text{ is a graph with } \alpha(G) = k\}$ is $\text{DP}$-complete under polynomial time reductions. Here, $\alpha(G)$ is the independence number of $G$, defined as the size of a maximum independent set of $G$. [2 points]

10. Locate $\text{DP}$ within the polynomial hierarchy, i.e., determine its relation to the classes $\Sigma_p^{i}$ and $\Pi_p^{i}$, as best as you can. See if you can say anything more by assuming that the hierarchy does not collapse. [2 points]