1. (2 pts) You are on the island of Knights and Knaves, and you come to a fork in the road. One path leads to the capital and you want to know which. There is an inhabitant of the island standing at the fork but he will answer only one yes or no question. What should you ask her to find out which path to take?

2. (2 pts) Define $\sigma_k$ inductively as $\sigma_0$ is $(P \rightarrow Q)$ and $\sigma_{k+1}$ is $(\sigma_k \rightarrow P)$. For which values of $k$ is $\sigma_k$ a tautology?