Problem 1: Let $T$ be a tree where the maximum degree is $\Delta$. Prove that $T$ has at least $\Delta$ leaves.
Problem 2:

You run into a town with 100 robots. You know that 99 of these robots tell the truth half the time and lie the other half. You also know that there is exactly 1 truthful robot in town, who always tells the truth. You take a robot at random and ask a question seven times, and the robot tells the truth every time. What is the probability that this is the truthful robot?
Problem 3:
Prove that $G$ or the complement of $G$ is connected. Note that the complement of a graph $G = (V, E)$ is $G^c = (V, E')$ and $\forall u, v \in V, \{u, v\} \in E' \iff \{u, v\} \not\in E$. 