1. Recall the Fibonacci sequence, where $F_0 = 0$, $F_1 = 1$, and $F_n = F_{n-1} + F_{n-2}$. Prove that, for all non-negative integers n, F_n is even if and only if n is divisible by 3.

2. Prove that every connected graph G with $|V| \geq 2$ has at least two distinct vertices x_1 and x_2 such that $G - x_1$ is connected and $G - x_2$ is connected.