Problem 1. Prove using induction, that for all integers \( N \geq 1 \), the following is true:

\[
\sum_{i=1}^{N} i = \frac{N(N + 1)}{2}
\]

Problem 2. You are given a graph \( G \) with \( V \) vertices and at most \((2V - 1)\) edges. Prove that there is at least one vertex of degree at most 4.