1. Prove that the sum of the interior angles of an \( n \)-sided convex polygon is \((n - 2)\) times 180 degrees. (4 pts)

2. For each of the following relations \( \sim \) on the given set \( X \) check if \( \sim \) is reflexive, symmetric and/or transitive. (2 pts each)

   a) \( X = \mathbb{R} \) and \( x \sim y \) if and only if \( x - y \) is an integer.

   b) \( X = \mathbb{R} \) and \( x \sim y \) if and only if \( x - y \) is a natural number.

   c) \( X = \mathbb{Z} \) and \( x \sim y \) if and only if \( xy > 0 \).

3. Show that for every positive integer \( n \), (at least) one of the numbers \( n, n + 1, \ldots, 2n \) is a perfect square (that is, a square of an integer). (5 pts)

4. Prove: If \( m \) is an integer that is a square of a rational number, then \( m \) is a square of an integer. (5 pts)