1. Proof by Contrapositive

   Proposition: If P, then Q.
   Proof:

   ⋮

   □

2. Prove that for every integer n, if $n^2 + 3n$ is odd, then n is odd.

3. Prove that for every pair of real numbers x and y, if $x + y$ is irrational, then either x is irrational or y is irrational.

4. Use proof by contrapositive to prove each statement below.

   (a) If the product of two integers ab is even, then a is even or b is even.

   (b) If n^2 is a multiple of 3, then n is a multiple of 3.

   (c) Suppose $x \in \mathbb{R}$. If $x^7 - 3x^4 + 10x^3 - x^2 - \pi \geq 0$, then $x \geq 0$.