Section 0.2 Proofs in Mathematics (Part 1)

Direct Proofs

P 1. Let x be an integer. Prove: If x is odd then x^2 is odd. Write a sketch of the proof first. Then write a formal proof.

P 2. Let x be an integer. Prove: If x is even then $x + 2$ is even.

Proof by Cases

P 3. Prove: For all integers x, $x^2 - 3x + 9$ is odd.

P 4. Prove: The integer x is odd if and only if x^2 is odd.

P 5. Prove: For all integer x, $x^2 \geq x$.