1) What is the power set of the set \( \{0, 1\} \)?

**Answer:** \( \{\emptyset, \{0\}, \{1\}, \{0,1\}\} \)

2) What can you say about the sets \( A \) and \( B \) if we know that \( A - B = B - A \)?

**Answer:** \( A = B \)
*(Can be proven by contradiction.)*

3) What can you say about the sets \( A \) and \( B \) if we know that \( A \oplus B = A \)?

**Answer:** \( B = \emptyset \)
*(Can be proven by contradiction.)*

4) a) Find \( f \circ g \) where \( f(x) = x^2 + 1 \) and \( g(x) = x + 2 \) are functions from \( \mathbb{R} \) to \( \mathbb{R} \).

**Answer:** \( f \circ g(x) = (x + 2)^2 + 1 \)

b) Find \( g^{-1}(\{0\}) \) where \( g(x) = \lfloor x \rfloor \) is a function from \( \mathbb{R} \) to \( \mathbb{R} \).

**Answer:** \( [0,1) \)
*(I.e., the set of all real numbers that have a floor of 0 is everything from 0 to 1, not including 1).*

5) Show that if \( A \) and \( B \) are sets, then \( A - B = A \cap \overline{B} \)

**Answer:**
\[
A - B = \{ x : x \in A \land x \notin B \} = A \cap \overline{B}
\]