3. Let \( A = \{1, 2, 3, 4, 5\} \), \( B = \{0, 1, 4, 8\} \), and \( C = \{2, 5, 7, 9, 11, 13, 17\} \). Compute each of the following.

   (a) \( A \cup B \)
   (b) \( A \cap B \)
   (c) \( A \cap C \)
   (d) \( A - B \)
   (e) \( A - (B \cup C) \)
   (f) \( (A - B) \cup (A - C) \)

2. Let \( A, B, \) and \( C \) be the sets given in the previous exercise and let the universal set \( U = \{0, 1, 2, 3, 4, \ldots, 20\} \). Compute the following.

   (a) \( \overline{A} \)
   (b) \( \overline{B} \)
   (c) \( A \cap B \)
   (d) \( A \cup \overline{B} \)

Let \( A, B \subset C \) be sets. Prove the each of the following:

   a) \( A \cap B \subset A \)
   b) \( A \cap \emptyset = \emptyset \)
   c) \( A \subset B \) if and only if \( A \cap B = A \).