

Questions

1. Translate the following English sentences using set notation.
 - (a) The set of all positive real numbers
 - (b) The set of all real numbers greater or equal to 2 and less than 10
 - (c) The set of all even numbers
 - (d) The set of all real numbers that are less than 5 units away from 1
 - (e) The set of all real numbers that are greater or equal to 6 units away from 2
2. Write the descriptions of the following sets in English.
 - (a) $\{x \in \mathbb{R} | x \leq -3\}$
 - (b) $\{x \in \mathbb{R} | |x - 3| < 2\}$
 - (c) $\{x \in \mathbb{R} | x = 2k + 1 \text{ for some } k \in \mathbb{Z}\}$
 - (d) $\{x \in \mathbb{R} | |3 - x| = 2\}$
3. Perform the set operation and graph the set.
 - (a) $A = \mathbb{Z}, B = [1, 6]$. Find $A \cap B$
 - (b) $A = (-\infty, 0), B = [-2, 4]$. Find $A \cup B$
 - (c) $A = (-2, 0), B = [0, 4]$. Find $A \cap B$
 - (d) $A = (-4, 0), B = [-2, 5]$. Find $A \cap B$
 - (e) $A = \mathbb{Z}, B = (1, 5], C = \{1, 2, 3\}$. Find $C \cup (A \cap B)$
 - (f) $A = \emptyset, B = [0, 2]$. Find $A \cup B$ and $A \cap B$.