1. Draw the following intervals on the number line.

(a) \([-1, 4)\]

(b) \((2, 6)\]

(c) \((3, \infty)\]

(d) \((-\infty, 5]\]

2. Write as an interval: \(\{x : x \in \mathbb{R}\} \) i.e., “The set of all \(x\), where \(x\) is a real number.” \((-\infty, \infty)\]

3. Plot on the number line: \([-2, 3) \cap \mathbb{Z}\); i.e., “The intersection of \([-2, 3)\) with the set of integers.”

4. Arrange from least to greatest: \(|-\pi|, |-3|, 3, |-4|, -4\).
Use the symbols “<” and “≤”.
\(-4 \leq -|-4| < 3 \leq |-3| < |-\pi|\)

5. Simplify to an integer: \(|2(|-1 - 3| \cdot |6 - 8|) - 5|\) \(11\)

6. Rewrite \(|x + 2| - |1 - x|\) without using the absolute value sign, where:
   (a) \(x < -2\) \(-3\)
   (b) \(x \geq 4\) \(3\)
   (c) \(x = 0\) \(1\)

7. Write using the absolute value sign the expression representing the distance on the number line between \(3\) and \(-1\).
\(|3 - (-1)|\)

8. Write using the absolute value sign: “The distance between \(x\) and \(-2\) is greater than or equal to \(3\).”
\(|x - (-2)| \geq 3\)

9. Consider the intervals \([-4, 3]\) and \([1, 8)\).
   (a) Draw these intervals on the number line and mark the interval representing their intersection.

   (b) Express the intersection in interval notation. \([1, 3]\)
   (c) Express the intersection in set notation without using the absolute value sign. \(1 \leq x \leq 3\)
   (d) Express the intersection using the absolute value sign. \(|x - 2| \leq 1\)

10. Write as a union of two intervals: \(\{x : |x - 3| > 4\}\). \((-\infty, -1) \cup (7, \infty)\)

11. Plot on the number line: \(\{x : |x + 2| \leq 5\}\)
12. Plot on the number line: \( \{ x : |4 - x| \geq 1 \} \)

13. Solve and write the answer in set notation: \(-2 < x - 3 < 4\). \( \{ x : 1 < x < 7 \} \)

14. Solve and write the answer in interval notation: \(|x + 4| \leq 5\) and \(x > -3\). \((-3, 1]\)

15. Solve and write the answer using absolute value: \(-7 < 1 - x < -5\). \(|x - 7| < 1\)