

1. How many positive integers satisfy the inequality $2x + 3 < 12$?
A) 1 B) 2 C) 3 D) 4 E) 5
2. Which positive integer(s) satisfy the inequality $2(3x-1)-3(x-1) < 2x+5$?
A) {2,3} B) {1} C) {1,2}
D) {1,3} E) {1,2,3}
3. What is the solution set of $2(3x+1)-3(x-1) < 2x+2$ in \mathbb{N} ?
A) \emptyset B) {1} C) {1,2} D) {1,3} E) {2,3}
4. How many positive integers are there whose one third is less than 4?
A) 11 B) 12 C) 13 D) 14 E) 15
5. Which one of the followings satisfies the system given below?

$$\begin{cases} x + y < 4 \\ x - y > 2 \end{cases}$$

A) (2,1) B) (1,-3) C) (3,1)
D) (1,3) E) (0,3)
6. Which of the following, is a point in the region defined by the following system?

$$\begin{cases} x + y > 4 \\ 2x - y < 2 \end{cases}$$

A) B(5,4) B) B(1,2) C) B(6,3)
D) B(2,5) E) B(5,-2)
7. Find the solution set of the system of inequalities $2x - 3 < 5$ and $3 - x \leq 5$.
A) [-4,2) B) (-2,4] C) [-2,4) D) (-2,4) E) [-2,4]
8. Find the solution set of the inequality $6x^2 + x - 1 \leq 0$.
A) $\{-1 \leq x \leq 3\}$ B) $\{-3 \leq x < 2\}$
C) $\{-\frac{1}{2} \leq x \leq \frac{1}{3}\}$ D) $\{1 \leq x \leq 2\}$
E) $\{-4 \leq x \leq -1\}$
9. Find the smallest integer whose cube is larger than 4 times that integer.
A) 1 B) 2 C) 3 D) 4 E) 5
10. Find the number of integers that satisfy the inequality $\sqrt{x^2 - 4x + 4} \leq 3$.
A) 8 B) 7 C) 6 D) 5 E) 4
11. Find the largest integer x , satisfying the inequality $\frac{x}{3} - \frac{3}{x} < 0$.
A) -4 B) -2 C) 2 D) 3 E) 4
12. Find the solution set of the system of inequalities

$$\begin{cases} x^2 - 9 < 0 \\ -x + 4 > 0 \end{cases}$$

A) $x > 4$ B) $-3 < x < 3$
C) $3 < x < 4$ D) $x < -3$
E) $-3 \leq x \leq 3$
13. Find the solution set of $(2-x)^2 \cdot (x+1) \cdot (3-x) > 0$
A) $(-\infty, -1)$ B) $(-1, 3)$ C) $(-1, 3) - \{2\}$
D) $(-1, 2) \cup (3, \infty)$ E) $(-\infty, 3)$
14. Which one of the followings is the solution set of $\frac{x \cdot (x^2 + 2x + 1)}{3 - x} \geq 0$?
A) [0,3) B) $(-\infty, -1] \cup [0, 3)$
C) $[-1, 0) \cup \{3\}$ D) $[0, 3) \cup \{-1\}$
E) $(-\infty, 0) \cup (3, +\infty)$
15. Which one of the following numbers does not satisfy the inequality $|x - 1| \leq 5$?
A) -5 B) -4 C) -3 D) -2 E) -1

16. Find the solution set of the absolute value inequality $|x^2 + 5| < 9$.

- A) (0,3) B) $[-\sqrt{5}, 2)$ C) (-2,2)
 D) (-3,3) E) $(\sqrt{5}, 3)$

17. Find the solution set of the absolute value inequality $|2 - 3x| > 8$.

- A) $x < -2, x > \frac{10}{3}$ B) $x < -2, x > 3$
 C) $x < -3, x > \frac{10}{3}$ D) $x < -3, x > 3$
 E) $x < -2, x > 2$

18. If $|x - 2| < 3$ and $|3 - y| < 5$, find the maximum value of $(4x - 2y)$. ($x, y \in \mathbb{Z}$)

- A) 20 B) 18 C) 15 D) 12 E) 10

19. How many integers are there satisfying the system?

$$\frac{x^2 + 1}{x - 3} \geq 0 \quad |x| \leq 5$$

- A) 5 B) 4 C) 3 D) 2 E) 1

20. Find the number of integer values that satisfy the inequality $7 < |3x - 2| < 13$.

- A) 1 B) 2 C) 3 D) 4 E) 5

21. Find the solution set of $|x + 2| > |x - 4|$.

- A) (-2,-1) B) $(-\infty, 1)$ C) $(1, \infty)$
 D) (-2,4) E) (2,4)

22. Solve the inequality $|1 - 3x| < 10$.

- A) $(-3, \frac{11}{3})$ B) (-2,3) C) $(-\frac{11}{3}, 3)$
 D) $(-3, \frac{10}{3})$ E) $(-2, \frac{11}{3})$

23. Find the number of integers x , that satisfies the inequality $|x^2 - 4x| < 5$.

- A) 3 B) 4 C) 5 D) 6 E) 7

24. What is the solution set of

$$\frac{|x + 2|(x - 2)^4}{(x^3 - 8)(x^2 + 2x + 2)} < 0?$$

- A) $(-\infty, 2)$ B) $(2, +\infty)$
 C) $(-\infty, -2)$ D) $(-2, +\infty) - \{2\}$
 E) $(-\infty, 2) - \{-2\}$