

Homework

1. Sum of roots of the equation $(x+3)^2 - 4|x+3| + 3 = 0$ is -
(A) 4 (B) 12 (C) -12 (D) -4
2. The solution of the inequality $|x^2 - 2x - 3| < |x^2 - x + 5|$ is -
(A) $(-\infty, 5)$ (B) $(-\infty, 2) \cup (3, 8) \cup (8, \infty)$ (C) $(-8, \infty)$
(D) $(3, 8)$
3. The minimum value of $f(x) = |x-1| + |x-2| + |x-3|$ is equal to -
(A) 1 (B) 2 (C) 3 (D) 0
4. The complete solution set of the inequality $\sqrt{x+18} < 2-x$ is -
(A) $[-18, -2]$ (B) $(-\infty, -2) \cup (7, \infty)$
(C) $(-18, 2) \cup (7, \infty)$ (D) $[-18, -2)$
5. Solution of the inequality, $x-3 < \sqrt{x^2+4x-5}$ is -
(A) $(-\infty, -5] \cup [1, \infty)$ (B) $(-5, 3]$
(C) $(-\infty, -5] \cup (\frac{7}{5}, \infty)$ (D) $(\frac{7}{5}, \infty)$
6. Number of real solutions of the equation $|x-3| = \frac{3x^2-10x+3}{3}$ is -
(A) exactly four (B) exactly three
(C) exactly two (D) exactly one
7. Solve the following equations where $x \in \mathbb{R}$
(a) $(x-1)|x^2 - 4x + 3| + 2x^2 + 3x - 5 = 0$
(b) $|x^2 + 4x + 3| + 2x + 5 = 0$
(c) $|x+3|(x+1) + (2x+5) = 0$

8. Match the column:

Consider the function $f(x) = |x-1| - 2|x+2| + |x+3|$

Column-I

Column-II

(A) $f(x) = k$ has no solution,
then $k \in$

(P) $(2, 4)$

(B) If $f(x) = k$ has one
solution, then $k \in$

(Q) $(-\infty, -2) \cup (4, \infty)$

(C) If $f(x) = k$ has two
solutions, then $k \in$

(R) $(-2, 2) \cup \{4\}$

(D) If $f(x) = k$ has
more than two
solutions, then $k \in$

(S) $\{-2, 2\}$

Answerkey:

1. - C

2. - C

3. B

4. D

5. A

6. B

7. (a) 1

(b) $-4, -\sqrt{3}-1$

(c) $-4, -2, -\sqrt{3}-1$

8. (A) \rightarrow (Q)

(B) \rightarrow (R)

(C) \rightarrow (P)

(D) \rightarrow (S)