

Topics : Fundamentals of Mathematics, Straight Lines

Type of Questions

M.M., Min.

Comprehension (no negative marking) Q.1 to Q.3

(3 marks, 3 min.)

[9, 9]

Single choice Objective (no negative marking) Q.4,5

(3 marks, 3 min.)

[6, 6]

Multiple choice objective (no negative marking) Q.6

(5 marks, 4 min.)

[5, 4]

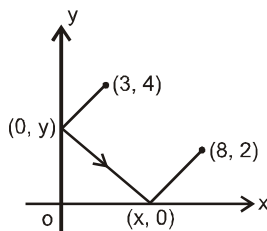
COMPREHENSION (Q.No. 1 to 3)

Let $||x - a| - b| = k$. Then

- (i) $k = 0, b > 0 \Rightarrow$ equation has two solutions
- (ii) $b > k > 0 \Rightarrow$ equation has four solutions
- (iii) $b = k > 0$ equation has three solutions
- (iv) $0 < b < k \Rightarrow$ equation has two solutions

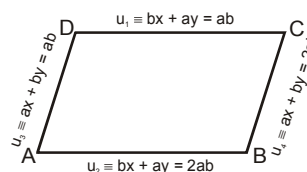
1. If number of solutions of $||x + 1| - 2| = 1$ is m , then $m =$
(A) 1 (B) 2 (C) 3 (D) 4
2. If number of solutions of $||x - 2| - 3| = m$ is ℓ , then $\ell =$
(where m is obtained in Q.No. 1)
(A) 1 (B) 2 (C) 3 (D) 4
3. Number of solutions of $||x - 2| - 5| = \ell + 3$ is
(where ℓ is obtained in Q.No. 2)
(A) 1 (B) 2 (C) 3 (D) 4
4. Given the family of lines, $a(3x + 4y + 6) + b(x + y + 2) = 0$. The line of the family situated at the greatest distance from the point P (2, 3) has equation :
(A) $4x + 3y + 8 = 0$ (B) $5x + 3y + 10 = 0$ (C) $15x + 8y + 30 = 0$ (D) none
5. Suppose a ray of light leaves the point (3, 4) reflects from the y-axis and moves towards the x-axis, then reflects from the x-axis, and finally arrives at the point (8, 2), then the value of x , is

- (A) $x = 4\frac{1}{2}$ (B) $x = 4\frac{1}{3}$
- (C) $x = 4\frac{2}{3}$ (D) $5\frac{1}{3}$



6. In a parallelogram as shown in the figure ($a \neq b$) :

- (A) equation of the diagonal AC is $(a + b)x + (a + b)y = 3ab$
- (B) equation of the diagonal BD is $u_1 u_4 - u_2 u_3 = 0$
- (C) co-ordinates of the points of intersection of the two diagonals are $\left(\frac{3ab}{2(a+b)}, \frac{3ab}{2(a+b)}\right)$
- (D) the angle between the two diagonals is $\pi/3$.



Answers Key

1. (D)

2. (B)

3. (C)

4. (A)

5. (B)

6. (A)(B)(C)