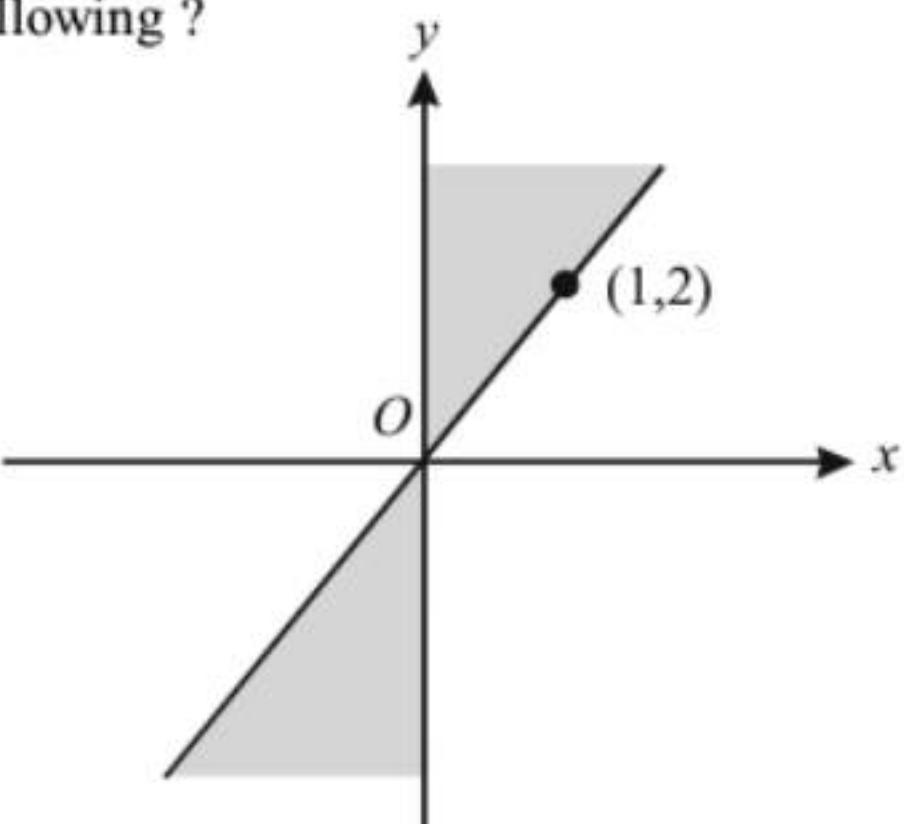


Practice Exercise

Level - I

1. If $0 < x < 5$ and $1 < y < 2$, then which of the following is true?
- (a) $x + y < 0$ (b) $-3 < 2x - 3y < 4$
 (c) $-6 < 2x - 3y < 7$ (d) $-3 < 3x - y < 2$
2. Which of the following is the solution set of $|2x - 3| < 7$?
- (a) $\{x : -5 < x < 2\}$ (b) $\{x : -5 < x < 5\}$
 (c) $\{x : -2 < x < 5\}$ (d) $\{x : x < -5 \text{ or } x > 2\}$
3. $|x^2 - 4x| < 5$
- (a) $-1 \leq x \leq 5$ (b) $1 \leq x \leq 5$
 (c) $-1 \leq x \leq 1$ (d) $-1 < x < 5$
4. If $1 \leq x \leq 3$ and $2 \leq y \leq 4$, what is the maximum value of $\left(\frac{x}{y}\right)$?
- (a) $\frac{2}{3}$ (b) 4
 (c) $\frac{3}{2}$ (d) 2
5. The solution set of $\frac{1}{4} + \frac{1}{x} < \frac{1}{2} + \frac{1}{3}$, when $x \in R$, is:
- (a) $\frac{1}{x} < \frac{7}{12}$ (b) $x \geq \frac{12}{7}$
6. If $x > 2, y > -1$, then which of the following holds good?
- (a) $xy > -2$ (b) $xy < -2$
 (c) $x > -\frac{2}{y}$ (d) None of these
7. If $x > 5$ and $y < -1$, then which of the following statements is true?
- (a) $(x + 4y) > 1$ (b) $x > -4y$
 (c) $-4x < 5y$ (d) None of these
8. If a and b are negative, and c is positive, which of the following statements is/are true?
- I. $a - b < a - c$ II. if $a < b$, then $\frac{a}{c} < \frac{b}{c}$
 III. $\frac{1}{b} < \frac{1}{c}$
 (a) I only (b) II only
 (c) III only (d) II and III only
9. If $x + y > 5$ and $x - y > 3$, then which of the following gives all possible values of x ?
- (a) $x > 3$ (b) $x > 4$
 (c) $x > 5$ (d) $x < 5$

Level - II

1. If $x \in R$, and $\alpha = \frac{x^2}{(1+x^4)}$, then
- (a) $0 \leq \alpha \leq 2$ (b) $0 \leq \alpha \leq 1$
 (c) $0 \leq \alpha \leq \frac{1}{4}$ (d) $0 \leq \alpha \leq \frac{1}{2}$
2. If $6 \geq x \geq -2$ and $4 \geq y \geq -4$, find the limits for $\frac{y}{x}$, where x and y are non-zero integers.
- (a) $\frac{y}{x} \geq 2, \frac{y}{x} \leq \frac{2}{3}$ (b) $\frac{y}{x} \geq \frac{-2}{3}, \frac{y}{x} \leq 2$
 (c) $\frac{y}{x} \geq \frac{-2}{3}, \frac{y}{x} \leq \frac{1}{4}$ (d) $\frac{y}{x} \geq -4, \frac{y}{x} \leq 4$
3. The shaded portion of figure shows the graph of which of the following?
- 
- (a) $x(y - 2x) \geq 0$ (b) $x(y - 2x) \leq 0$
 (c) $x\left(y + \frac{1}{2}x\right) \geq 0$ (d) $x\left(y - \frac{1}{2}x\right) \leq 0$

4. For the real numbers p, q, r, x, y , let $p < x < q$ and $p < y < r$. Which one of the following is correct?
- (a) $p < x < y < r$ (b) $p < x < q < r$
 (c) $p < y < x < q$ (d) None of these
5. Given that $-1 \leq v \leq 1$, $-2 \leq u \leq -0.5$ and $-2 \leq z \leq -0.5$ and $w = \frac{vz}{u}$, then which of the following is necessarily true?
- (a) $-0.5 \leq w \leq 2$ (b) $-4 \leq w \leq 4$
 (c) $-4 \leq w \leq 2$ (d) $-2 \leq w \leq -0.5$
6. If $|b| \geq 1$ and $x = -|a|b$, then which one of the following is necessarily true?
- (a) $a - xb < 0$ (b) $a - xb \geq 0$
 (c) $a - xb > 0$ (d) $a - xb \leq 0$
7. The number of solutions of the equation $2x + y = 40$ where both x and y are positive integers and $x \leq y$
- (a) 7 (b) 13
 (c) 14 (d) 18
8. If a , b and c are three real numbers, then which of the following is NOT true?
- (a) $|a+b| \leq |a| + |b|$
 (b) $|a-b| \leq |a| + |b|$
 (c) $|a-b| \leq |a| - |b|$
 (d) $|a-c| \leq |a-b| + |b-c|$
9. x and y are real numbers satisfying the conditions $2 < x < 3$ and $-8 < y < -7$. Which of the following expressions will have the least value?
- (a) x^2y (b) xy^2
 (c) $5xy$ (d) None of these