Coordinate Geometry

1) **Which of the following equations are linear equations?**

(i) $(3/2)x + 4 = 2x - 3$

(ii) $5y - 3 = 2y + 4$

(iii) $u + 4 = u^2 - 4$

(iv) $3x + 2 = 5x - 7$

(v) $x^2 + 2 = x + 1$

(vi) $y - 3 = 3y + 4$

(vii) $u + 1/u = 5$

(viii) $(x - 1)^2 = x^2 - 2$

(ix) $(x - 1)(x - 2) = 6$

(x) $(x - 2)(x + 3) = x + 7$

2) **Name the quadrant in which the point lies:**

(a) A (1, 1)

(b) B (2, 4)

(c) C (-3, -10)

(d) D (-1, 2)

(e) E (1, -1)

(f) F (-2, -4)

(g) G (-3, 10)

(h) H (1, -2)

3) In the following equations, verify whether the given value of the variable is a solution of the equation:

(i) $x + 4 = 2x$; $x = 4$ (ii) $y - 7 = 3y + 8$; $y = 3$

(iii) $3u + 2 = 2u + 7$; $u = 5$ (iv) $2x - 3 = x/2 - 2$; $x = \sqrt{2}$

(v) $(5/2)x + 3 = 21/2$; $x = 3$ (vi) $24 - 3(u - 2) = u + 8$; $u = -1$

(vii) $(x - 2) + (x + 3) = x + 8$; $x = 0$.

4) Which of the following points lie on the x-axis?

A (1, 1), B (1, 0), C (0, 1), D (0, 0), E (-1, 0), F (0, -1), G (4, 0), H (0, 7)

5) Solve the following equations:

(i) $3x + 3 = 15$ (ii) $2y + 7 = 19$ (iii) $\frac{5}{2}x + 3 = \frac{21}{2}$

(iv) $\sqrt{3}x - 2 = 2\sqrt{3} + 4$ (v) $8u + \frac{21}{4} = 3u + 7$

(vi) $(\sqrt{5} + 5)x + 4 = 2\sqrt{5} + 8$ (vii) $2x - (3x - 4) = 3x - 5$

(viii) $2x + \sqrt{2} = 3x - 4 - 3\sqrt{2}$

6) Which of the following points lie on the *x*-axis?

(A) (3, 4)

(B) (7, 0)

(C) (0, 8)

(D) (-9, 0)

(E) $\left(\frac{1}{2}, 0\right)$

(F) (-3, -5)

7) Which of the following points lie on the y-axis?

A (1, 1), B (1, 0), C (0, 1), D (0, 0), E (-1, 0), F (0, -1), G (4, 0), H (0, 7)

8) Draw the graph of equation $x - 2y = 4$. Read a few solutions from the graph and verify the same by actual substitution. In each case, find the points where the line meets the two axes.

9) Plot the points A (2, 0), B (2, 2), C (0, 2) and join OA, AB, BC and CO. What figure do you obtain ?

10) Draw the graph of $2(x + 3) - 3(y + 1) = 0$. Read a few solutions from the graph and verify the same by actual substitution. In each case, find the points where the line meets the two axes.

11) Plot the points A (4, 4), B (-4, 4) and join OA, OB and BA. What figure do you obtain ?

12) Find a value for a so that each of the following equations may have x = l, y = l as a

13) Find out which of the following equations have $x = 2$, $y = 1$ as a

14) Draw the graph for the equation $-2x + y - 7 = 0$. Check whether the point (-3, -2) is on the given line.

15) In each case find the points where the line meets the two axes.

(i) $2x + y = 6$
(ii) $x - 2y = 4$
(iii) $2(x - 1) + 3y = 4$
(iv) $y - 3x = 9$
(v) $2(x + 3) - 3(y + 1) = 0$
(vi) $(x - y) - y + 4 = 0$

16) Find at least 3 solutions for the following linear equation in two variables:
$2x + 5y = 13$

17) Draw the graph of the equation $y = 3x - 4$ and read off the value of y when $x = -1$

18) Find at least 3 solutions for the following linear equation in two variables:
$5x + 3y = 4$

19) Find at least 3 solutions for the following linear equation in two variables:
$2x + 3y = 4$

20) Solve for x:
$$(x + 1)(x + 3) = (x + 4)(x - 1)$$

21) Solve for x:
$$\sqrt{3u} - 2 = 2\sqrt{3} + 4$$

22) Find at least 3 solutions for the following linear equation in two variables:
$2x-3y+7= 0$

23) Which of the following equations are linear?

(i) $5x^2 + 4x + 1 = 0$

(ii) $x^3 - 1 = 0$

(iii) $x^3 + 1 = 0$

(iv) $(x - 5)(x - 7) = 8$

(v) $6x = 42$

(vi) $\frac{x}{8} = 9$

(vii) $x + 10 = 17$

(viii) $x - 9 = 2$

(ix) $(x + 2)^2 = x^2 + 16$

(x) $(x - 2)(x + 5) = x + 14$

24) Find the solutions of the form $x = a, y = 0$ and $x = 0, y = b$ for each of the following pairs of equations.

Do they have any common such solution?

(i) $3x + 2y = 6$ and $5x - 2y = 10$

(ii) $5x + 3y = 15$ and $5x + 2y = 10$

(iii) $9x + 7y = 63$ and $x - y = 10$

25) Draw the graph of the following equation: $y = 0$