Assignment Class X Linear Equation in two variables

Graphical Method

Q1.Draw the graph of equation $2y - x = 7$ and determine from the graph whether $x = 3$, $y = 2$ is a solution or not?

Q2. Solve graphically the following system of linear equations:

(a) $x + 2y - 3 = 0$; $4x + 3y = 2$ (b) $3x + y = 1$; $2y = 2 - 6x$

(c) $2x - y = 2$; $2y - 4x = 2$ (d) $4x - y = 4$; $4x + y = 12$

(e) $4x + 6y = 9$; $2x + 3y = -11$ (f) $x + 4y = -8$; $3x + 2y = 6$

Q3. Determine graphically the vertices of a triangle whose sides are:

(a) $3x - y = 7$; $4x - 5y = 2$; $x = -2$ (b) $2x = y - 3$; $x + y = 3$; $y = 5$

(c) $x - 2y + 8 = 0$; $5y - x - 14 = 0$; $2x - y + 1 = 0$ (d) $2y - x = 8$; $5y - x = 14$; $y - 2x = 1$

(e) $y = x$; $y = 2x$; $x + y = 6$ (f) $y = x$; $3y = x$; $x + y = 8$

Q4. Solve graphically the following system of linear equations:

$x + 2y - 7 = 0$; $2x - y + 1 = 0$. Also, find the co-ordinates of the points where the lines meet the y-axis.

Q5. Solve graphically the following system of linear equations:

$2x + y = 6$; $x - 2y = -2$. Also, find the co-ordinates of the points where the lines meet the x-axis.

Q6. Draw the graphs of the following equations on the same graph paper:

$3x - 2y = 6$; $3x + y = 15$. Find the co-ordinates of the vertices of a triangle formed by the two lines and x-axis.

Q7. Draw the graphs of the following equations on the same graph paper:

$2x + 3y - 12 = 0$; $x - y - 1 = 0$. Find the co-ordinates of the vertices of a triangle formed by the two lines and y-axis.

Algebraic Method

Q8. Solve the following equations by substitution method:

(a) $3x + 11y = 13$; $8x + 13y = 2$ (b) $x + 2y = 1.6$; $2x + y = 1.4$

(c) $12x - 16y = 20$; $6y + 8x = 30$ (d) $8x - 5y + 40 = 0$; $7x - 2y = 0$

Q9. Solve the following equations by equating the coefficient method:

(a) $2x + 3y = 28$; $3x - 4y = -9$ (b) $28x - 15y = 41$; $21x + 13y = 55$

(c) $6x + 7y = 32$; $y = 29 - 9x$ (d) $2x + 0.4y = 1.2$; $3.4x - 0.02y = 0.01$

Q10. Solve the following using cross-multiplication method. Also, use any other method to solve them.

(a) $(a - b)x + (a + b)y = 2(a^2 - b^2)$; $(a + b)x - (a - b)y = 4ab$

(b) $\frac{x}{a} = \frac{y}{b}$; $ax + by = a^2 + b^2$

(c) $ax + by = a - b$; $bx - ay = a + b$

(d) $\frac{x}{a} - \frac{y}{b} = a - b$; $ax + by = a^3 + b^3$

(e) $\frac{a}{x} - \frac{b}{y} = 0$; $\frac{ab^2}{x} + \frac{a^2b}{y} = a^2 + b^2$; x, y are non-zero.

Q11. Solve the following system of equations:

(a) $129x + 48y = 483$; $48x + 129y = 402$ (b) $53x + 47y = 271$; $47x + 53y = 229$

(c) $4x + \frac{6}{y} = 15$; $3x - \frac{4}{y} = 7$ (d) $\frac{1}{2x} - \frac{1}{y} = -1$; $\frac{1}{x} + \frac{1}{2y} = 8$

(e) $\frac{x + y}{xy} = 2$; $\frac{x - y}{xy} = 6$ (f) $\frac{22}{x + y} + \frac{15}{x - y} = 5$; $\frac{55}{x + y} + \frac{45}{x - y} = 14$

(g) $2(3x - y) = 5xy$; $2(x + 3y) = 5xy$ (h) $\sqrt{2}x - \sqrt{3}y = 0$; $\sqrt{5}x + \sqrt{2}y = 0$

Answers

Ans1 No **Ans2 (a)** x = -1; y = 2 **(b)** infinite solutions **(c)** No solution **(d)** x = 2, y = 4 **(e)** No Solution **(f)** x = 4, y = -3 **Ans3 (a)** (3,2), (-2,-13), (-2,-2) **(b)** (0,3), (1,5), (2,-5) **(c)** (4,-2), (1,3), (2,5) **(d)** (1,3), (-4,2), (2,5) **(e)** (0,0), (2,4), (3,3) **(f)** (0,0), (4,4), (6,2) **Ans 4** x = 1, y = 3, (0,7/2),(0,1) **Ans 5** x = 2, y = 2, (3,0), (-2,0) **Ans 6** (4,3), (2,0), (5,0) **Ans 7** (0,-1), (3,2), (0,4) **Ans 8 (a)** x = -3, y = 2 **(b)** x = 0.4, y = 0.6 **(c)** x = 3, y = 1 **(d)** x = 80/19, y = 280/19 **Ans 9 (a)** x = 5, y = 6 **(b)** x = 2, y = 1 **(c)** x = 3, y = 2 **(d)** x = 0.02, y = 2.9 **Ans 10 (a)** x = a + b, y = a – b **(b)** x = a, y = b **(c)** x = 1, y = -1 **(d)** $x = a^2$, $y = b^2$ **(e)** x = a, y = b **Ans 11 (a)** x = 3, y = 2 **(b)** x = 6, y = -1 **(c)** x = 3, y = 2 **(d)** x = 1/6, y = 1/4 **(e)** x = -1/2, y = 1/4 **(f)** x = 8, y = 3 **(g)** x = 2, y = 1 **(h)** x = 0, y = 0