13. Linear Equations in Two Variables

Exercise 13.1

1. Question

Express the following linear equations in the form $ax+by+c = 0$ and indicate the values of *a, b* and *c* in each case:

(i) $-2x+3y = 12$

(ii) $x- \frac{y}{2} -5 = 0$

(iii) $2x+3y = 9.3\overline{5}$

(iv) $3x = -7y$

(v) $2x+3 = 0$

(vi) $y - 5 = 0$

(vii) $4 = 3x$

(viii) $y = \frac{x}{2}$

Answer

(i) $-2x+3y = 12$

⇒ $-2x + 3y - 12 = 0$

⇒ a = - 2, b = 3, c = -12

(ii) $x- \frac{y}{2} -5 = 0$

⇒ $2x - y - 10 = 0$

⇒ a = 2, b = -1, c = -10

(iii) $2x+3y = 9.3\overline{5}$

⇒ $2x + 3y - 9.3\overline{5} = 0$

⇒ a = 2, b = 3, c = $9.3\overline{5}$

(iv) $3x = -7y$

⇒ $3x + 7y = 0$

⇒ a = 3, b = 7 and c = 0

(v) $2x+3 = 0$

⇒ a = 2, b = 0 and c = 3

(vi) $y - 5 = 0$

⇒ a = 0, b = 1, c = - 5

(vii) $4 = 3x$

⇒ $3x - 4 = 0$

⇒ a = 3, b = 0, c = -4

(viii) y = x/2

⇒ $x - 2y = 0$

⇒ a = 1, b = -2, c = 0

2. Question

Write each of the following as an equation in two variables.

(i) $2x = -3$

(ii) $y = 3$

(iii) $5x = \frac{7}{2}$

(iv) $y = \frac{3}{2}x$

Answer

(i) $2x = -3$

$\Rightarrow 2x + 0y + 3 = 0$

(ii) $y = 3$

$\Rightarrow 0x + y - 3 = 0$

(iii) $5x = 7/2$

$\Rightarrow 10x + 0y - 7 = 0$

(iv) $y = 3x/2$

$\Rightarrow 3x - 2y + 0 = 0$

3. Question

The cost of ball pen is Rs. 5 less than half of the cost of fountain pen. Write this statement as a linear equation in two variables.

Answer

Let the cost of one fountain pen be Rs. 'x' and the cost of one ball pen is Rs. 'y'

Given, cost of ball pen is Rs. 5 less than half of the cost of fountain pen.

$\Rightarrow y = (\dfrac{x}{2}) - 5$

$\Rightarrow 2y = x - 10$

$\Rightarrow x - 2y - 10 = 0$

Exercise 13.2

1. Question

Write two solutions for each of the following equations:

(i) $3x + 4y = 7$

(ii) $x = 6y$

(iii) $x + \pi y = 4$

(iv) $\frac{2}{3}x - y = 4$

Answer

(i) $3x + 4y = 7$

At, $x = 1$

$3 + 4y = 7$

$\Rightarrow y = 1$

Thus, x = 1, y = 1 is a solution

At, x = 0,

0 + 4y = 7

⇒ y = 7/4

Thus, x = 0, y = 7/4 is a solution.

(ii) x = 6y

At, y = 0

⇒ x = 0

Thus, x = 0, y = 0 is a solution.

At y = 1,

⇒ x = 6

Thus, x = 6, y = 1 is a solution

(iii) $x + \pi y = 4$

At x = 0,

πy = 4

⇒ y = 4/π

Thus, x = 0, y = 4/π is a solution

At y = 0,

⇒ x + 0 = 4

⇒ x = 4

Thus, x = 4, y = 0 is a solution

(iv) $\frac{2}{3}x - y = 4$

At x = 0,

⇒ 0 – y = 4

⇒ y = -4

Thus, x = 0, y = 4 is a solution

At x = 3,

⇒ 2 – y = 4

⇒ y = -2

Thus, x = 3, y = -2 is a solution

2. Question

Write two solutions of the form $x = 0$, $y = a$ and $x = b$, $y = 0$ for each of the following equations:

(i) $5x - 2y = 10$

(ii) $-4x + 3y = 12$

(iii) $2x + 3y = 24$

Answer

(i) 5x – 2y = 10

At x = 0,

⇒ 0 – 2y = 10

⇒ y = -5

Thus, x = 0, y = -5 is a solution

At y = 0 ,

⇒ 5x = 10

⇒ x = 2

Thus, x = 2, y = 0 is a solution

(ii) $-4x+3y=12$

At x = 0,

0 + 3y = 12

⇒ y = 4

Thus, x = 0 and y = 4 is a solution

At y = 0,

-4x + 0 = 12

⇒ x = -3

Thus, x = -3 and y = 0 is a solution

(iii) $2x+3y=24$

At x = 0,

⇒ 0 + 3y = 24

⇒ y = 8

Thus, (0, 8) is a solution

At y = 0

3. Question

Check which of the following are solutions of the equation $2x-y=6$ and which are not:

(i) (3,0)

(ii) (0,6)

(iii) (2,-2)

(iv) ($\sqrt{3}$,0)

(v) ($\frac{1}{2}$, -5)

Answer

(i) (3, 0)

⇒ 2 × 3 – 0 = 6

⇒ 6 = 6

Thus (3, 0) is a solution

(ii) (0, 6)

⇒ 2 × 0 – 6 = 6

⇒ -6 = 6

This is not true, thus (0, 6) is not a solution

(iii) (2, -2)

⇒ 2 × 2 + 2 = 6

⇒ 6 = 6

Thus, (2, -2) is a solution

(iv) (√3, 0)

⇒ 2√3 – 0 = 6

⇒ 2√3 = 6

This is not true, thus (2√3, 0) is not a solution

(v) (1/2, - 5)

⇒ (2/2) – (-5) = 6

⇒ 6 = 6

Thus (1/2, -5) is a solution.

4. Question

If x = -1, y = 2 is a solution of the equation $3x+4y=k$, find the value of k.

Answer

3x + 4y = k

If x = -1, y = 2 is a solution of the equation, then

⇒ 3 × -1 + 4 × 2 = k

⇒ k = 5

5. Question

Find the value of λ, if $x=-λ$ and $y = \frac{5}{2}$ is a solution of the equation $x+4y-7=0$.

Answer

x + 4y – 7 = 0

For, $x=-λ$ and $y = \frac{5}{2}$ to be a solution

⇒ -λ + 4 × (5/2) – 7 = 0

⇒ λ = 10 – 7 = 3

6. Question

If x = 2α+1 and y = α-1 is a solution of the equation $2x-3y+5=0$, find the value of α.

Answer

Given, x = 2α+1 and y = α-1 is a solution of the equation $2x-3y+5=0$

⇒ 2 × (2α + 1) – 3(α – 1) + 5 = 0

⇒ 4α +_2 – 3α + 3 + 5 = 0

⇒ α = -10

7. Question

If $x=1$ and $y=6$ is a solution of the equation $8x-ay+a^2=0$, find the values of a.

Answer

Given, $x=1$ and $y=6$ is a solution of the equation $8x-ay+a^2=0$

$\Rightarrow 8 \times 1 - a \times 6 + a^2 = 0$

$\Rightarrow a^2 - 6a + 8 = 0$

$\Rightarrow a^2 - 4a - 2a + 8 = 0$

$\Rightarrow a(a - 4) - 2(a - 4) = 0$

$\Rightarrow (a - 2)(a - 4) = 0$

$\Rightarrow a = 2, 4$

Exercise 13.3

1. Question

Draw the graph of each of the following linear equations in two variables:

(i) $x+y=4$

(ii) $x-y=2$

(iii) $-x+y=6$

(iv) $y=2x$

(v) $3x+5y=15$

(vi) $\frac{x}{2} - \frac{y}{3} = 2$

(vii) $\frac{x-2}{3} = y-3$
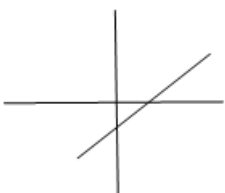
(viii) $2y = -x+1$

Answer

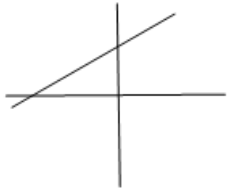(i) $x + y = 4$

It passes through (0, 4) and (4, 0)
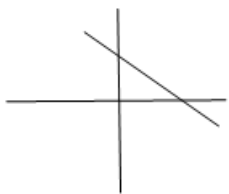
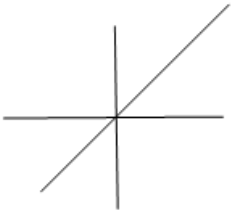(ii) $x - y = 2$

It passes through (0, -2) and (2, 0)

(iii) $-x + y = 6$

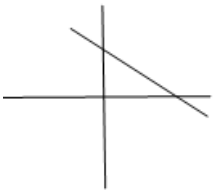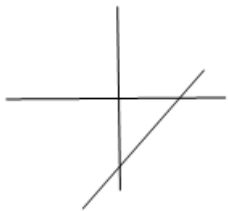It passes through (0, 6) and (-6, 0)

(iv) y = 2x

It passes through (0, 0)

(v) 3x + 5y = 15

It passes through (5, 0) and (0, 3)

(vi) x/2 – y/3 = 2
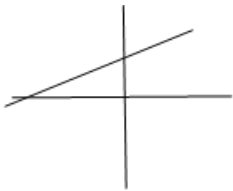
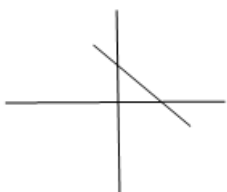It passes through (4, 0) and (0, - 6)

(vii) (x – 2)/3 = y – 3

⇒ x – 3y + 7 = 0

It passes through (-7, 0) and (0, 7/3)

(viii) 2y = -x + 1

It passes through (0, 1/2) and (1, 0)

2. Question

Give the equations of two lines passing through (3, 12). How many more such lines are there, and why?

Answer

Equation of line passing through a point (a, b)

(x – a) = m(y – b)

Where 'm' is an integer

There are infinite lines passing through a point.

Equation of two lines passing through (3, 12)

Taking m = 1, 2

$\Rightarrow$ x – 3 = y – 12

$\Rightarrow$ x – y + 9 = 0

And, (x – 3) = 2(y – 12)

$\Rightarrow$ x - 3 = 2y – 24

$\Rightarrow$ x – 2y + 21 = 0

3. Question

A three-wheeler scooter charges Rs. 15 for dirst kilometre and Rs. 8 each for every subsequent kilometre. For a distance of x km, an amount of Rs. y is paid. Write the linear equation representing the above information.

Answer

Given, a three-wheeler scooter charges Rs. 15 for first kilometre and Rs. 8 each for every subsequent

kilometre. For a distance of x km, an amount of Rs. y is paid.

$\Rightarrow$ 15 × 1 + (x – 1) × 8 = y

$\Rightarrow$ 8x – y + 7 = 0

4. Question

A lending library has a fixed charge for the first three days and an additional charge for each day thereafter. Aarushi paid Rs. 27 for a book kept for seven days. If fixed charges are Rs. x and per day charges are Rs. y. Write the linear equation representing the above information.

Answer

Given, lending library has a fixed charge for the first three days and an additional charge for each day

thereafter. Aarushi paid Rs. 27 for a book kept for seven days. If fixed charges are Rs. x and per day charges

are Rs. y.

$\Rightarrow$ 3 × x + (7 – 3) × y = 27

$\Rightarrow$ 3x + 4y = 27

5. Question

A number is 27 more than the number obtained by reversing its digits. If its unit's and ten's digit are x and y respectively, write the linear equation representing the above statement.

Answer

Given, a number is 27 more than the number obtained by reversing its digits.

Number is 10y + x

Reverse of the number is 10x + y

$\Rightarrow$ 10y + x = 10x + y + 27

$\Rightarrow$ 9x – 9y + 27 = 0

⇒ x – y + 3 = 0

6. Question

The sum of a two digit number and the number obtained by reversing the order of its digits is 121. If units and ten's digit of the number of x and y respectively, then write the linear equation representing the above statement.

Answer

Given, sum of a two digit number and the number obtained by reversing the order of its digits is 121

Number is 10y + x

Reverse of the number is 10x + y

⇒ 10y + x + 10x + y = 121

⇒ 11x + 11y = 121
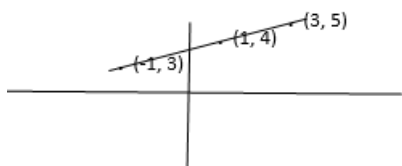
⇒ x + y = 11

7. Question

Plot the points (3,5) and (-1,3) on a graph paper and verify that the straight line passing through these points also passes through the point (1,4).

Answer

Thus, the line passing through (-1, 3) and (3, 5) passes through the point (1, 4).

8. Question

From the choices given below, choose the equation whose graph in Fig. 13.13.

(i) y = x
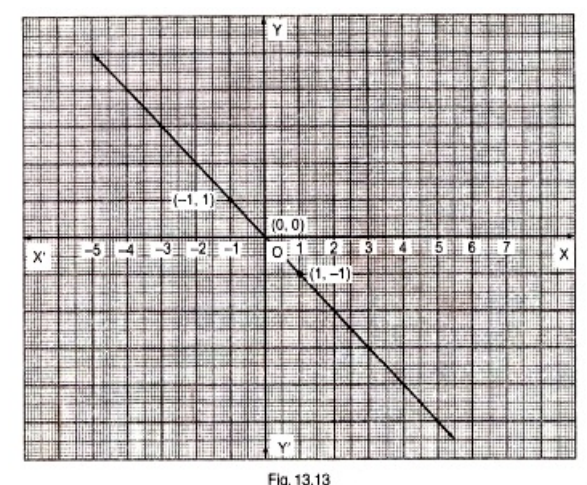
(ii) x+y=0

(iii) $y=2x$

(iv) $2+3y=7x$

Fig. 13.13

[Hint: Clearly, (-1,1) and (1,-1) satisfy the equation $x+y=0$]

Answer

From the graph, the line passes through (1, - 1) and (-1, 1)

(i) y = x

⇒ 1 = -1 which is not true

(ii) x + y = 0

⇒ 1 – 1 = 0

⇒ 0 = 0

Also, - 1 + 1 = 0

⇒ 0 = 0

Thus x + y = 0 is a equation

(iii) y = 2x

⇒ -1 = 2 which is not true

(iv) 2 + 3y = 7x

⇒ 2 – 3 = 7

⇒ -1 = 7 which is not true

9. Question

From the choices given below, choose the equation whose graph is given in Fig. 13.14

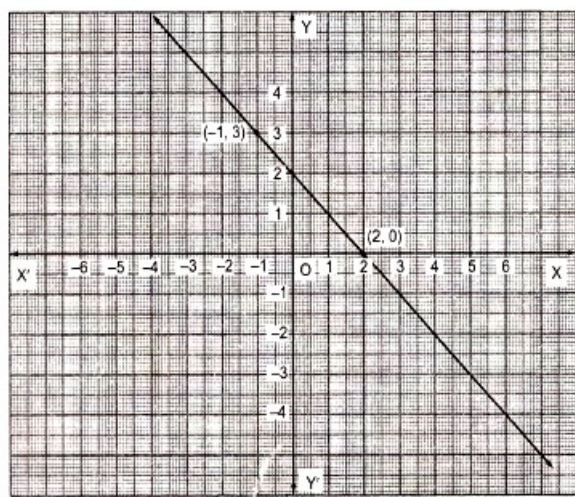(i) $y=x+2$

(ii) $y=x-2$

(iii) $y=-x+2$

(iv) $x+2y=6$.

Fig. 13.14

[Hint: Clearly, (2,0) and (-1,3) satisfy the equation $y=-x+2$]

Answer

The line passes through (-1, 3) and (2, 0)

(i) y = x + 2

⇒ 3 = -1 + 2

⇒ 3 = 1 which is not true

(ii) y = x – 2

⇒ 3 = -1 – 2

⇒ 3 = -3 which is not true

(iii) y = -x + 2

⇒ 3 = 1 + 2

⇒ 3 = 3

Also, for (2, 0)

⇒ 0 = -2 + 2

⇒ 0 = 0

Thus, y = -x + 2 is the equation

(iv) x + 2y = 6

⇒ -1 + 6 = 6

⇒ 5 = 6 which is not true

10. Question

If the point (2,-2) lies on the graph of the linear equation $5x+ky=4$, find the value of k.

Answer

Given, the point (2,-2) lies on the graph of the linear equation $5x+ky=4$

⇒ 5 × 2 – 2k = 4

⇒ 2k = 6

⇒ k = 3

11. Question

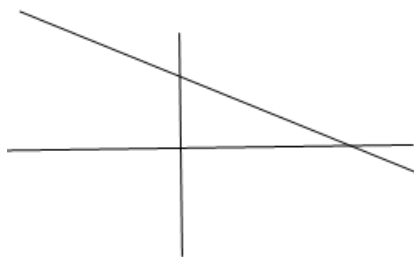Draw the graph of the equation $2x+3y=12$. From the graph, find the coordinates of the point.

(i) whose y-coordinates is 3.

(ii) whose x-coordinate is -3.

Answer

$2x+3y=12$

It passes through (6, 0) and (0, 4)

From the graph, at y = 3, x = 3/2

And at x = -3, y = 6

(i) (3/2, 3)

(ii) (-3, 6)

12. Question

Draw the graph of each of the equations given below. Also, find the coordinates of the points where the graph cuts the coordinate axes:
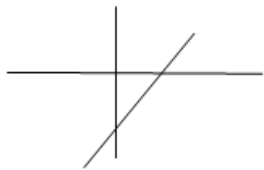
(i) $6x–3y=12$

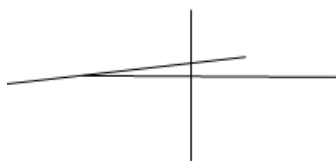(ii) $-x+4y=8$

(iii) $2x+y=6$
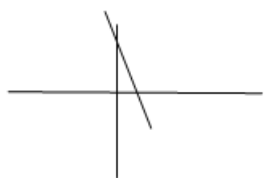
(iv) $3x+2y+6=0$

Answer

(i) 6x – 3y = 12

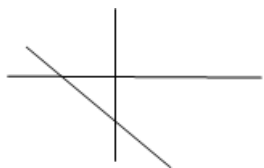It cuts the coordinate axis at (2, 0) and (0, -4)

(ii) –x + 4y = 8

It cuts the coordinate axis at (-8, 0) and (0, 2)

(iii) 2x + y = 6

It cuts the coordinate axis at (0, 6) and (3, 0)

(iv) 3x + 2y + 6 = 0

It cuts the coordinate axis at (-2, 0) and (0, -3)

13. Question

Draw the graph of the equation $2x+y=6$. Shade the region bounded by the graph and the coordinate axes. Also, find the area of the shaded region.

Answer

2x + y = 6

It cuts the coordinate axis at (3, 0) and (0, 6)
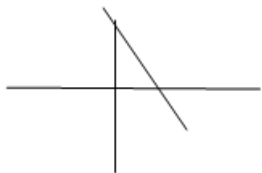
Area of the region = (1/2) × 3 × 6 = 9 sq. unit

14. Question

Draw the graph of the equation $\frac{x}{3}+\frac{y}{4}=1$. Also find the area of the triangle formed by the line and the

coordinates axes.

Answer

x/3 + y/4 = 1

The line cuts the axes at (3, 0) and (4, 0)

Area of the triangle fomed $= \frac{1}{2} \times 3 \times 4 = 6 \, sq.\, unit$

15. Question

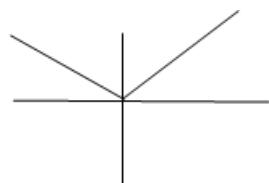Draw the graph of $y = |x|$.

Answer

Y = |x|

For every x, y is positive

Y = x for x > 0 and y = -x for x < 0

16. Question

Draw the graph of $y = |x| + 2$.

Answer

Y = |x| + 2

y = x + 2 for x > 0

And y = -x + 2 for x < 0
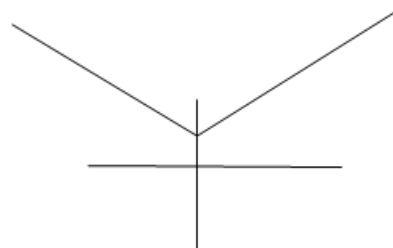
17. Question

Draw the graphs of the following linear equations on the same graph paper.

$2x + 3y = 12$, $x - y = 1$

Find the coordinates of the vertices of the triangle formed by the two straight lines and the *y*-axis. Also, find the area of the triangle.
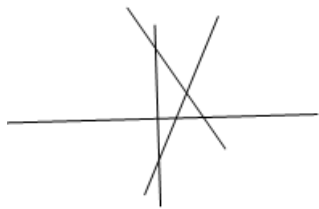
Answer

X - Y = 1

2x + 3y = 12

2x + 3y = 12 passes through (6, 0) and (0, 4)

x – y = 1 passes through (1, 0) and (0, -1)

Coordinates of the vertices of the triangle formed with the y axis are (0, 4), (0, -1) and (3, 2)

Base of the triangle = 4 + 1 =

Height of the triangle = 3

Area of the triangle $= \frac{1}{2} \times base \times height$

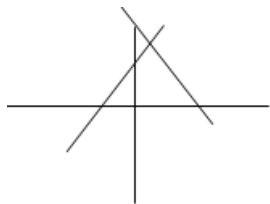⇒ Area of the triangle $= \frac{1}{2} \times 5 \times 3 = \frac{15}{2} sq\ unit$

18. Question

Draw the graphs of the linear equations 4x-3y+4=0 and 4x+3y-20=0. Find the area bounded by these lines and x-axis.

Answer

4x-3y+4=0 passes through (-1, 0) and (0, 4/3)

4x + 3y – 20 = 0 passes through (5, 0) and (0, 20/3)

Coordinates of the vertices of triangle with x-axis, (-1, 0), (5, 0) and (2, 4)

Height of the triangle = 4

Base of the triangle = 5 + 1 = 6

Area of the triangle = 1/2 × 4 × 6 = 12 sq. unit

19. Question

The path of a train A is given by the equation 3x+4y-12=0 and the path of another train B is given by the equation 6x+8y-48=0. Represent this situation graphically.

Answer

Given, path of a train A is given by the equation 3x+4y-12=0 and the path of another train B is given by the equation 6x+8y-48=0.
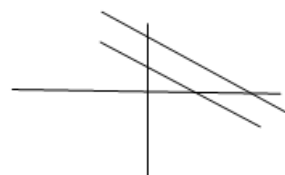
3x + 4y – 12 = 0 passes through (4, 0) and (0, 3)

6x + 8y – 48 = 0 passes through (8, 0) and (0, 6)

20. Question

Ravish tells his daughter Aarushi, "Seven years ago, I was seven times as old as you were then. Also, three years from now, I shall be three times as old as you will be." If present ages of Aarushi and Ravish are *x* and *y* years respectively, represent this situation algebraically as well as graphically.

Answer

Given, present ages of Aarushi and Ravish are *x* and *y* years respectively.

Eq1: $(y - 7) = 7(x - 7)$

$\Rightarrow y = 7x - 42$ which passes through (0, -42) and (6, 0)

Eq2: $(y + 3) = 3(x + 3)$

$\Rightarrow y = 3x + 6$ which passes through (0, 6) and (-2, 0)

21. Question

Aarushi was driving a car with uniform speed of 60 km/h. Draw distance-time graph. From the graph, find the distance travelled by Aarushi on
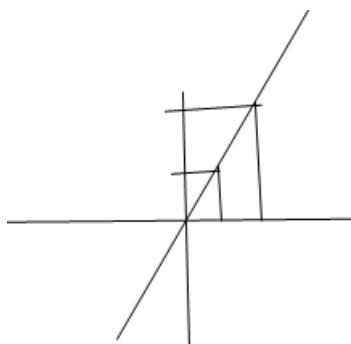
(i) $2\frac{1}{2}$ Hours

(ii) $\frac{1}{2}$ Hour

Answer

Uniform speed is 60 km/hr

Speed = distance/time

$\Rightarrow$ distance = 60 × time

Slope of diatance time graph is 60.

(i) Distance travelled in 2.5 hours = 150 km

(ii) Distance travelled in 0.5 hours = 30 km

Exercise 13.4

1. Question

Give the geometric representations of the following equations

(a) on the number line
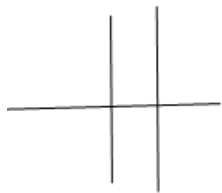
(b) on the Cartesian plane:

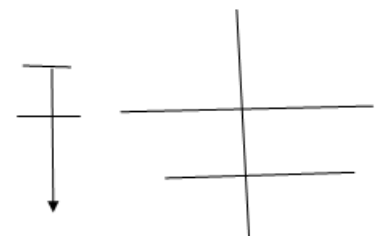(i) $x=2$

(ii) $y+3=0$

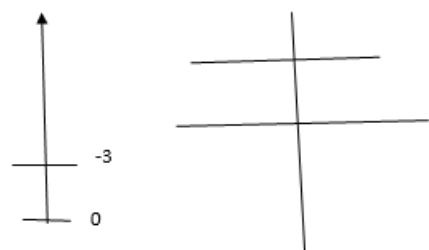(iii) $y=3$

(iv) $2x+9=0$

(v) $3x-5=0$
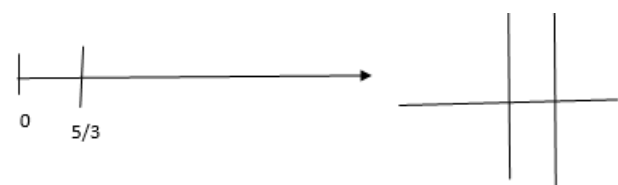
Answer

(i) x = 2

(ii) y + 3 = 0

(iii) y = 3

(iv) 2x + 9 = 0

(v) 3x – 5 =0

2. Question

Give the geometrical representation of $2x+13=0$ as an equation in

(i) One variable

(ii) two variables

Answer

$2x + 13 = 0$

(i) One variable
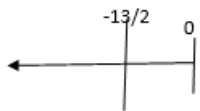
(ii) two variables

3. Question

Solve the equation $3x+2=x-8$, and represent the solution on

(i) the number line

(ii) The Cartesian plane.

Answer

$3x + 2 = x - 8$

$\Rightarrow 2x = -10$

$\Rightarrow x = -5$

(i) on number line

(ii) on the Cartesian plane

4. Question

Write the equation of the line that is parallel to x-axis and passing through the point

(i) (0,3)

(ii) (0,4)

(iii) (2,-5)

(iv) (-4,-3)

Answer

Slope of the line parallel to x – axis is 0

Eq of line parallel to x-axis and passing through (a, b) is y – b = 0

(i) (0, 3)

⇒ y – 3 = 0

(ii) (0, 4)

⇒ y – 4 = 0

(iii) (2, - 5)

⇒ y + 5 = 0

(iv) (-4, -3)
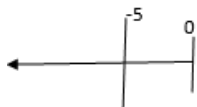
⇒ y + 3 = 0

5. Question

Write the equation of the line that is parallel to y-axis and passing through the point

(i) (4,0)

(ii) (-2,0)

(iii) (3,5)

(iv) (-4,-3)

Answer

Slope of the line that is parallel to y-axis is infinity.

Eq of the line parallel to y-axis passing through (a, b) is x – a = 0

(i) (4, 0)

⇒ x – 4 = 0

(ii) (-2, 0)

⇒ x + 2 = 0

(iii) (3, 5)

⇒ x – 3 = 0

(iv) (-4, - 3)

⇒ x + 4 = 0

CCE - Formative Assessment

1. Question

Write the equation representing x-axis.

Answer

Equation of the line representing x-axis is y = 0

2. Question

Write the equation representing y-axis.

Answer

Equation of the line representing y-axis is x = 0

3. Question

Write the equation of a line passing through the point (0,4) and parallel to x-axis.

Answer

Equation of a line parallel to x-axis passing through (a, b) is y = b

Thus, equation of a line passing through the point (0,4) and parallel to *x*-axis is y = 4

4. Question

Write the equation of a line passing through the point (3,5) and parallel to *x*-axis.

Answer

Equation of a line parallel to x-axis passing through (a, b) is y = b

Thus, equation of a line passing through the point (3, 5) and parallel to *x*-axis is y = 5

5. Question

Write the equation of a line parallel to *y*-axis and passing through the point (-3,-7).

Answer

Equation of a line parallel to y-axis passing through (a, b) is x = a

Thus, equation of a line passing through the point (-3, -7) and parallel to *y*-axis is x = -3

6. Question

A line passes through the point (-4,6) and is parallel to *x*-axis. Find its equation.

Answer

Equation of a line parallel to y-axis passing through (a, b) is x = a

Thus, equation of a line passing through the point (-4, 6) and parallel to *y*-axis is x = -4

7. Question

Solve the equation 3*x*-2=2*x*+3 and represent the solution on the number line.
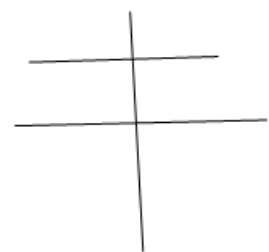
Answer

3x – 2 = 2x + 3

⇒ x = 5
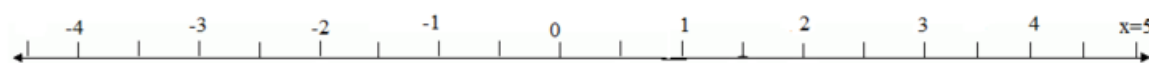
8. Question

Solve the equation 2*y*-1 = *y*+1 and represent it graphically on the coordinate plane.

Answer

2y – 1 = y + 1

⇒ y = 2

9. Question

If the point (*a*,2) lies on the graph of the linear equation 2*x*-3*y*+8=0, find the value of *a*.

Answer

Given, point (a,2) lies on the graph of the linear equation $2x-3y+8=0$

Thus, (a, 2) satisfies the equation

⇒ 2a – 6 + 8 = 0

⇒ 2a = -2

⇒ a = -1

10. Question

Find the value of k for which the point (1,-2) lies on the graph of the linear equation $x-2y+k=0$.

Answer

Given, (1,-2) lies on the graph of the linear equation $x-2y+k=0$

Thus, (1, -2) satisfies the equation

⇒ 1 + 4 + k = 0

⇒ k = - 5

1. Question

If (4,19) is a solution of the equation $y=ax+3$, then $a=$

A. 3

B. 4

C. 5

D. 6

Answer

Given, (4, 19) is a solution of the equation $y=ax+3$

⇒ 19 = 4a + 3

⇒ a = 4

2. Question

If (a,4) lies on the graph of $3x+y=10$, then the value of a is

A. 3

B. 1

C. 2

D. 4

Answer

Given, (a,4) lies on the graph of $3x+y=10$

Thus it is a solution

⇒ 3a + 4 = 10

⇒ a = 2

3. Question

The graph of the linear equation $2x-y=4$ cuts x-axis at

A. (2,0)

B. (-2,0)

C. (0,-4)

D. (0,4)

Answer

2x – y = 4

At y = 0, x = 2

Thus the line cuts the x-axis at (2, 0)

4. Question

How many linear equations are satisfied by x=2 and y=-3?

A. Only one

B. Two

C. Three

D. Infinitely many

Answer

Infinitely many equations satisfy x = 2 and y = 3 as infinitely many lines pass through a single point.

5. Question

The equation x-2=0 on number line is represented by

A. a line

B. a point

C. infinitely many lines

D. two lines

Answer

X – 2 = 0

X = 2 is a point on the number line

6. Question

x=2, y=-1 is a solution of the linear equation

A. x+2y=0

B. x+2y=4

C. 2x+y=0

D. 2x+y=5

Answer

X = 2 and y = -1

We will check by substituting the values in the given equations

(a) 2 - 2 = 0 which is true

Thus x + 2y = 0 is the equation

(b) 2 - 2 = 4 which is not true

(c) 4 - 1 = 0 which is not true

(d) 2 × 2 - 1 = 5 which is not true

7. Question

If $(2k-1, k)$ is a solution of the equation $10x-9y=12$, then $k=$

A. 1

B. 2

C. 3

D. 4

Answer

Given, $(2k-1, k)$ is a solution of the equation $10x-9y=12$

⇒ 20x – 10 – 9k = 12

⇒ 11k = 22

⇒ k = 2

8. Question

The distance between the graph of the equations $x = -3$ and $x=2$ is

A. 1

B. 2

C. 3

D. 5

Answer

Distance between the graph of the equations $x = -3$ and $x=2$ is = 2 – (-3) = 5 units

9. Question

The distance between the graphs of the equations $y = -1$ and $y = 3$ is

A. 2

B. 4

C. 3

D. 1

Answer

Distance between the graphs of the equations $y = -1$ and $y = 3$ is = 3 – (-1) = 4 units

10. Question

If the graph of the equation $4x+3y=12$ cuts the coordinate axes at A and B, then hypotenuse of right triangle AOB is of length

A. 4 units

B. 3 units

C. 5 units

D. none of these

Answer

4x + 3y = 12

A is (3, 0)

B is (0, 4)

Base of triangle AOB = OA = 3 untis

Perpendicualr of triangle AOB = OB = 4 units

$Hypotenuse^2 = perepndicular^2 + base^2$

$\Rightarrow Hypotenuse^2 = 16 + 9 = 25$ sq units

$\Rightarrow Hypotenuse = 5$ units