25. Graphs

Exercise 25A

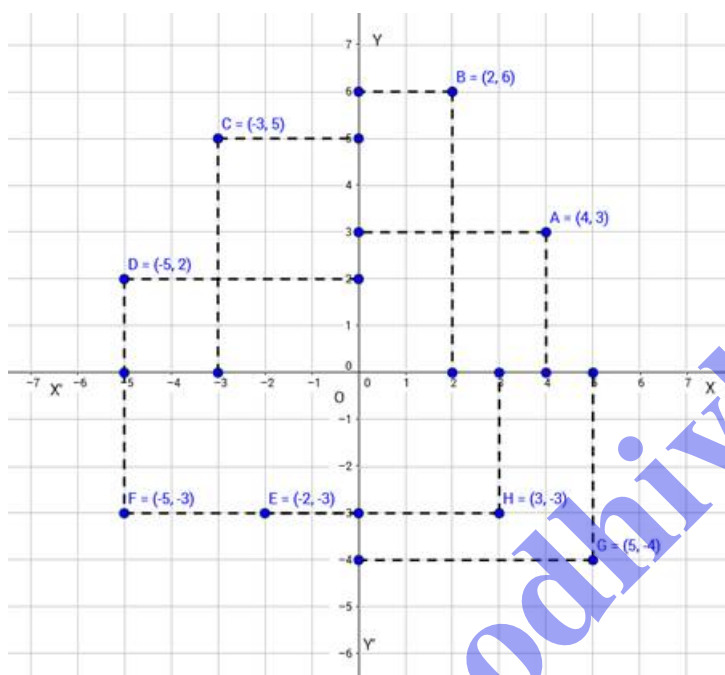**1. Question**

On a graph paper draw the coordinate axes X'OX and YOY', and plot each of the following points:

(i) $A(4,3)$ (ii) $B(2,6)$

(iii) $C(-3,5)$ (iv) $D(-5,2)$

(v) $E(-2,-3)$ (vi) $F(-5,-3)$

(vii) $G(5,-4)$ (viii) $H(3,-3)$

Answer

Let X'OX and YOY' be the coordinate axes.

(i) On the x−axis, take 4 units to the right of the y axis; and then on the y−axis, take 3 units above the x−axis. Thus, we obtain the point A(4,3)

(ii) On the x−axis, take 2 units to the right of the y−axis; and then on the y−axis, take 6 units above the x−axis. Thus, we obtain the point B(2,6)

(iii) On the x−axis, take 3 units to the left of the y−axis; and then on the y−axis, take 5 units above the x−axis. Thus, we obtain the point C(−3,5)

(iv) On the x−axis, take 5 units to the left of the y−axis; and then on the y−axis, take 2 units above the x−axis. Thus, we obtain the point D(−5,2)

(v) On the x−axis, take 2 units to the left of the y−axis; and then on the y−axis, take 3 units below the x−axis. Thus, we obtain the point E(−2,−3)

(vi) On the x−axis, take 5 units to the left of the y−axis; and then on the y−axis, take 3 units below the x−axis. Thus, we obtain the point F(−5,−3)

(vii) On the x−axis, take 5 units to the right of the y−axis; and then on the y−axis, take 4 units below the x−axis. Thus, we obtain the point G(5,−4)

(viii) On the x−axis, take 3 units to the right of the y−axis; and then on the y−axis, take 3 units below the x−axis. Thus, we obtain the point H(3,−3)
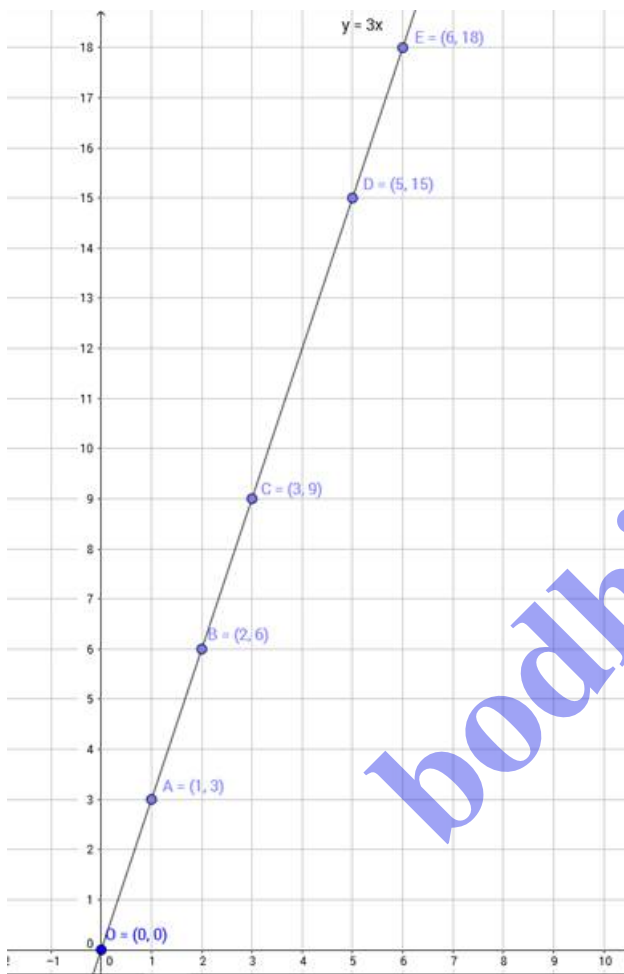
Exercise 25B

1 A. Question

Draw the graph of the function y = 3x.

Answer

The given function is y=3x. For some different values of x, ie corresponding values of y are given below:

x	0	1	2
y	0	3	6

Now, let us plot the points O(0,0), A(1,3) and B(2,6).

∴ Now, we obtain our required graph.

1 B. Question

From the graph, find the value of y, when

(i) $x = 3$ (ii) $x = 5$ (iii) $x = 6$

Answer

(i) Our point C to be plotted lies on function y = 3x.

Here, first plotting y = 3x.

Here, x = 3.

∴ Now for abscissa equal to 3, we plot the point on y = 3x, ie y = 3 × 3 = 9

Hence, the value of y is 9

(ii) Our point to be plotted lies on function y = 3x.

Here, first plotting y = 3x.

Here, x = 5.

∴ Now for abscissa equal to 5, we plot the point on y = 3x, ie y = 3 × 5 = 15

Hence, the value of y is 15

(iii) Our point to be plotted lies on function y = 3x.

∴Here, first plotting y = 3x.

Here, x = 6.

∴ Now for abscissa equal to 6, we plot the point on y = 3x, ie y = 3 × 6 = 18
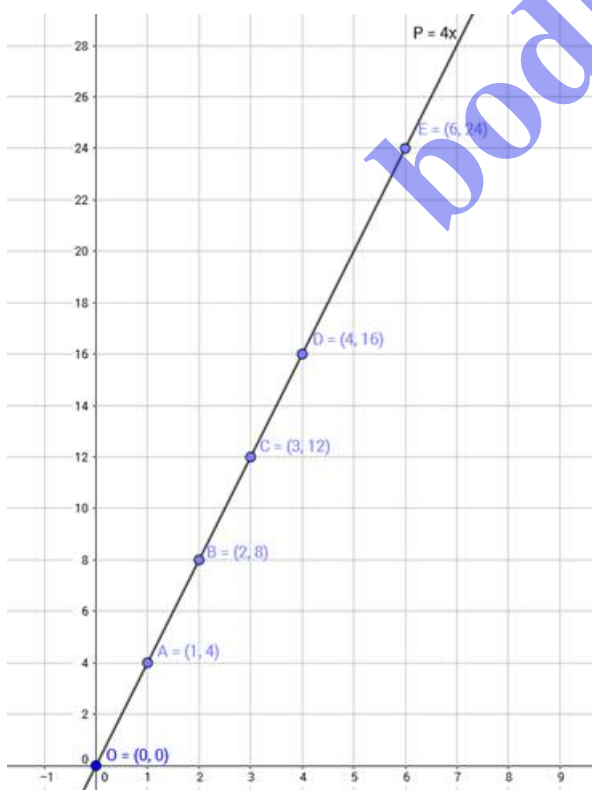
Hence, the value of y is 18

2 A. Question

Draw the graph of the function P = 4x.

Answer

The given function is P = 4x. For some different values of x, the corresponding values of P are given below:

x	0	1	2
P	0	4	8

Now let us plot the points, O(0,0), A(1,4) and B(2,8)

∴ Now, we obtain our required graph.

2 B. Question

From the graph, find the value of P, when

(i) $x = 3$ (ii) $x = 4$ (iii) $x = 6$

Answer

(i) Our point C to be plotted lies on function P = 4x.

∴Here, first plotting P = 4x.

Here, x = 3.

∴ Now for abscissa equal to 3, we plot the point on P = 4x, ie P = 4 × 3 = 12

Hence, the value of P is 12

(ii) Our point D to be plotted lies on function P = 4x.

∴Here, first plotting P = 4x.

Here, x = 4.

∴ Now for abscissa equal to 4, we plot the point on P = 4x, ie P = 4 × 4 = 16

Hence, the value of P is 16

(iii) Our point E to be plotted lies on function P = 4x.

∴Here, first plotting P = 4x.

Here, x = 6.

∴ Now for abscissa equal to 6, we plot the point on P = 4x, ie P = 4 × 6 = 24

Hence, the value of P is 24

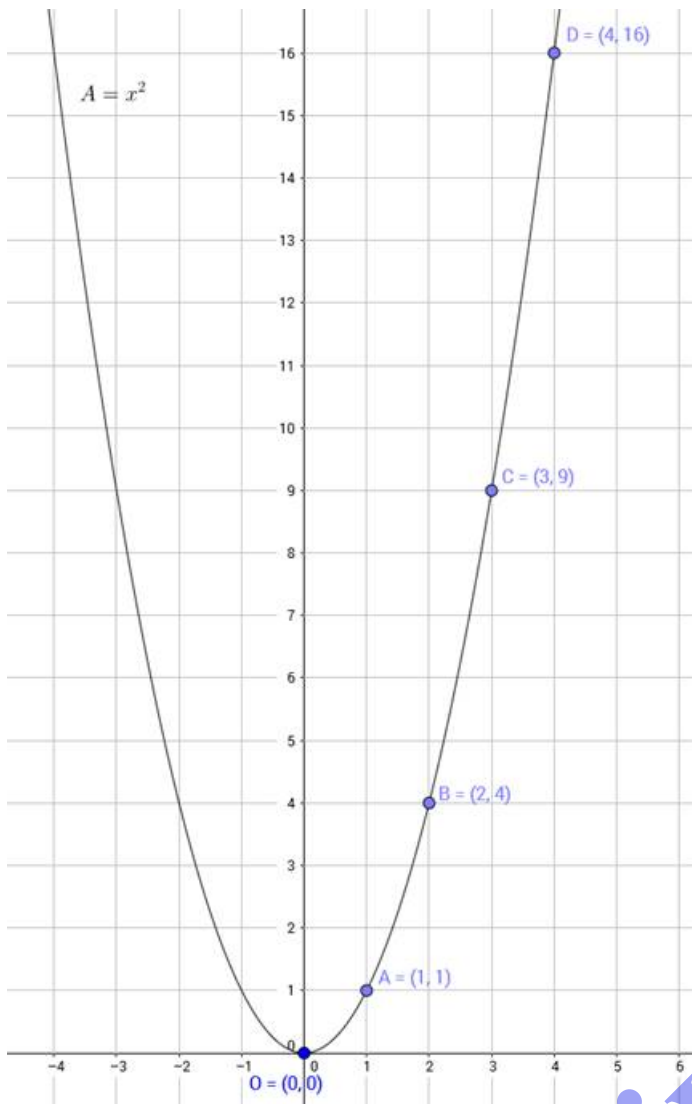**3 A. Question**

Draw the graph of the function A = x^2.

Answer

The given function is A=x^2 .

For some different values of x, the corresponding values of A are given below:

x	0	1	2
A	0	1	4

Now let us plot the points, O(0,0), S(1,1) and P(2,4).

$A = x^2$

D = (4, 16)

C = (3, 9)

B = (2, 4)

A = (1, 1)

O = (0, 0)

∴ Now we obtain the required graph.

3 B. Question

From the graph, find the value of A, When

(i) $x = 2$ (ii) $x = 3$ (iii) $x = 4$

Answer

(i) Our point B to be plotted lies on function A = x^2.

∵Here, first plotting A = x^2.

Here, x = 2.

∴ Now for abscissa equal to 2, we plot the point on A = x^2., ie A = 2^2 = 4

Hence, the value of A is 4

(ii) Our point C to be plotted lies on function A = x^2.

∵Here, first plotting A = x^2.

Here, x = 3.

∴ Now for abscissa equal to 3, we plot the point on A = x^2., ie A = 3^2 = 9

Hence, the value of A is 9

(iii) Our point to be plotted lies on function A = x^2.

∵Here, first plotting A = x^2.

Here, x = 4.

∴ Now for abscissa equal to 4, we plot the point on A = x^2., ie A = 4^2 = 16

Hence, the value of A is 16

Exercise 25C

1. Question

In which of the following quadrants does the point $P(3, 6)$ lie?

A. I

B. II

C. III

D. IV

Answer

Here, given point is P(3,6).

Both the coordinates are positive.

Hence, point P lies in first quadrant.

2. Question

In which of the following quadrants does the point $(-7, -1)$ lie?

A. I

B. II

C. III

D. IV

Answer

Here, given point is (-7,-1).

Both the coordinates are negative.

Hence, given point lies in third quadrant.

3. Question

In which of the following quadrants does the point $A(2, -3)$ lie?

A. I

B. II

C. III

D. IV

Answer

Here, given point is $A(2, -3)$.

Here, abscissa of a point is positive and ordinate is negative.

Hence, given point lies in fourth quadrant.

4. Question

In which of the following quadrants does the point $Q(-4, 1)$ lie?

A. I

B. II

C. III

D. IV

Answer

Here, given point is $Q(-4, 1)$

Here, abscissa of a point is negative and ordinate is positive.

Hence, given point lies in second quadrant.

5. Question

The abscissa of a point is its distance from the

A. origin

B. x-axis

C. y-axis

D. none of these

Answer

We know that the abscissa of a point is its distance from the y−axis.

6. Question

The graph of y = a is

A. the x-axis

B. the y-axis

C. a line parallel to the y-axis

D. a line parallel to the x-axis

Answer

Here, the line y = a is parallel x-axis.

7. Question

The equation representing the y-axis is

A. $x = 0$

B. $y = 0$

C. $x = a$

D. $y = a$

Answer

We know that the graph x = a is a line parallel to the y-axis.

Hence, for x = 0, line represents y axis.