

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) $B(2,6)$

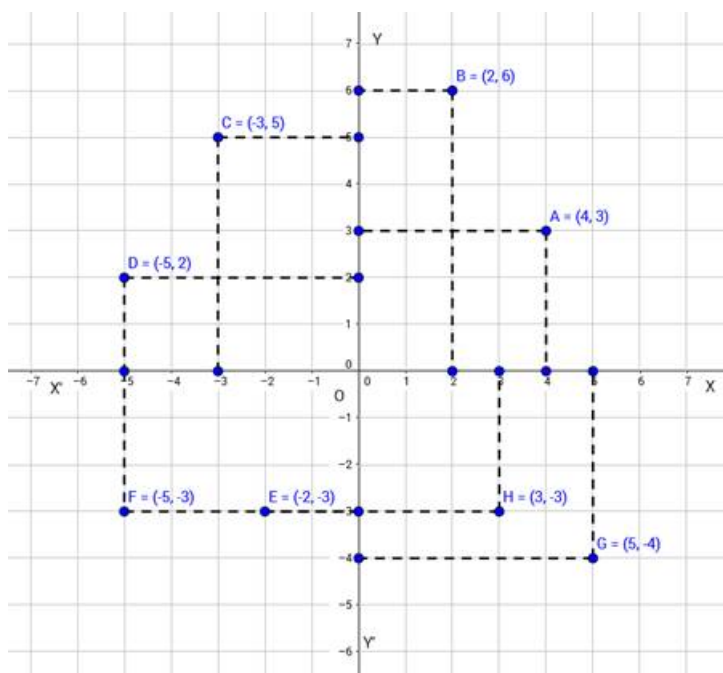
(iii) $C(-3,5)$ (iv) $D(-5,2)$

(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

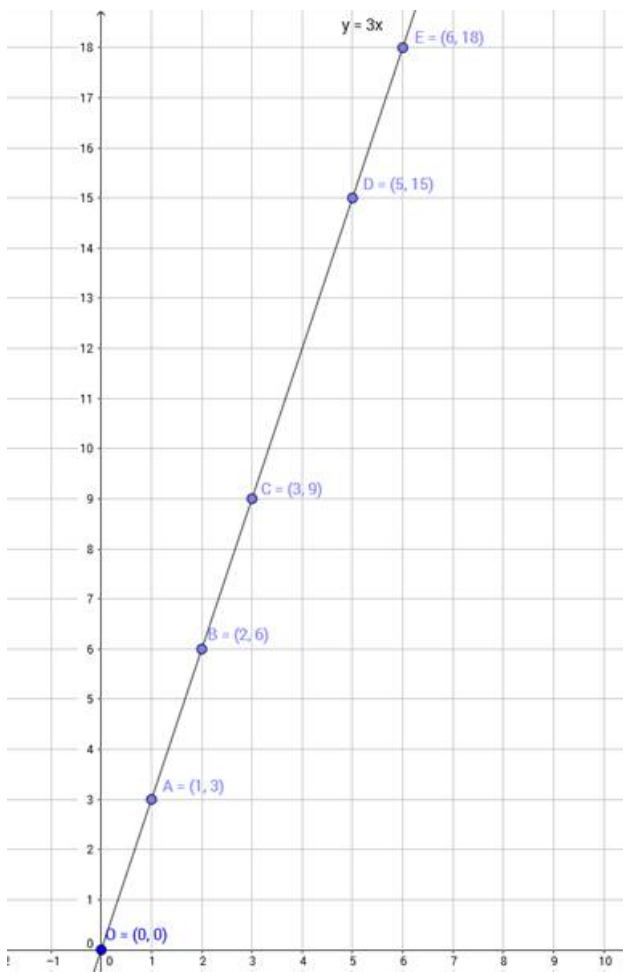
Draw the graph of the function $y = 3x$.

Answer

The given function is $y=3x$. For some different values of x , the 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 $B(2,6)$.



\therefore 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, $x = 3$.

\therefore Now for abscissa equal to 3, we plot the point on $y = 3x$, ie $y = 3 \times 3 = 9$

Hence, the value of y is 9

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

Here, first plotting $y = 3x$.

Here, $x = 5$.

\therefore Now for abscissa equal to 5, we plot the point on $y = 3x$, ie $y = 3 \times 5 = 15$

Hence, the value of y is 15

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

\therefore Here, first plotting $y = 3x$.

Here, $x = 6$.

\therefore Now for abscissa equal to 6, we plot the point on $y = 3x$, ie $y = 3 \times 6 = 18$

Hence, the value of y is 18

2 A. Question

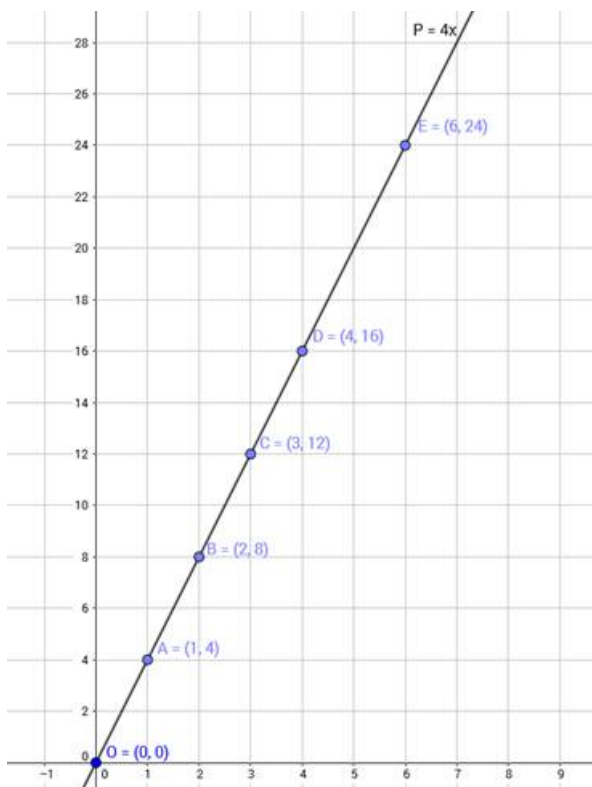
Draw the graph of the function $P = 4x$.

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 $B(2,8)$



\therefore 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 $P = 4 \times 3 = 12$

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 $P = 4 \times 4 = 16$

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 $P = 4 \times 6 = 24$

Hence, the value of P is 24

3 A. Question

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

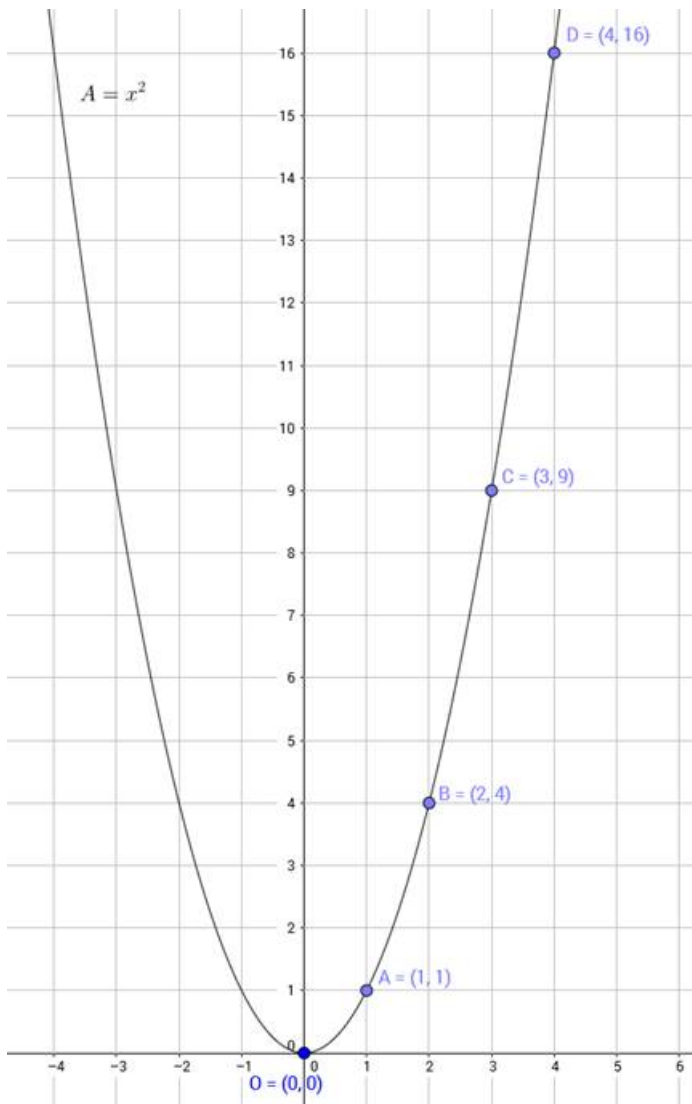
Answer

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).



∴ 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, $x = 4$.

\therefore 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.