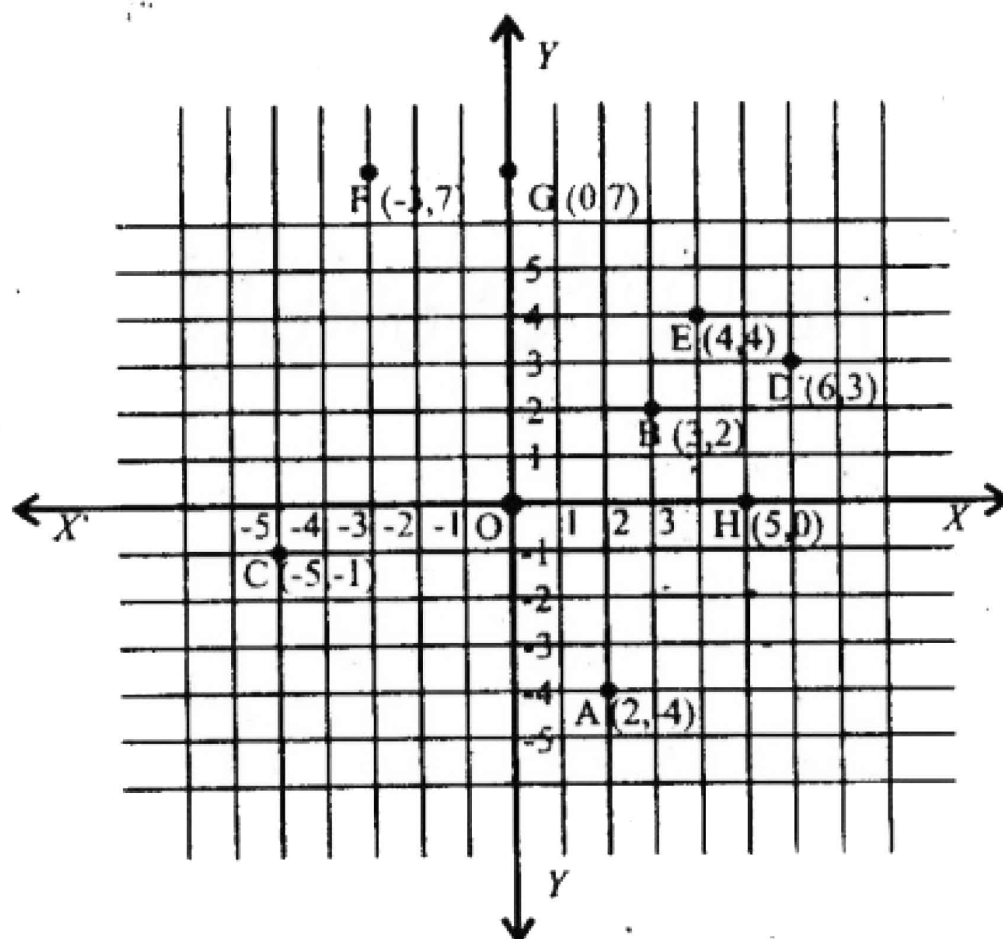


Exercise 9.1

1- Represent the points on the graph whose co-ordinates are given below.

- | | |
|-------------------|------------------|
| (i) $A(2, -4)$ | (ii) $B(3, 2)$ |
| (iii) $C(-5, -1)$ | (iv) $D(6, 3)$ |
| (v) $E(4, 4)$ | (vi) $F(-3, 7)$ |
| (vii) $G(0, 7)$ | (viii) $H(5, 0)$ |

Solution:-

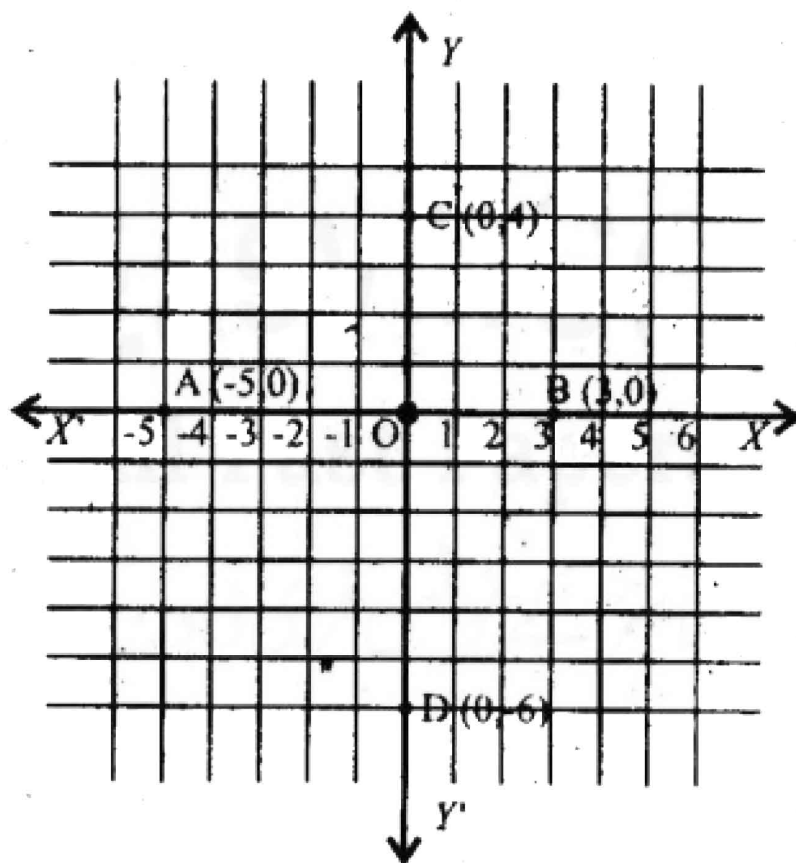


2- Write down the co-ordinates of:

- (i) Origin
- (ii) A point lying on the left hand side of x-axis and at a distance of 5 units from the origin.
- (iii) A point lying to the right hand side of the origin on

x-axis at a distance of 3 units from the origin.

- (iv) A point lying above x-axis and on y-axis at a distance of 4 units.
- (v) A point lying below x-axis and on y-axis at a distance of 6 units.



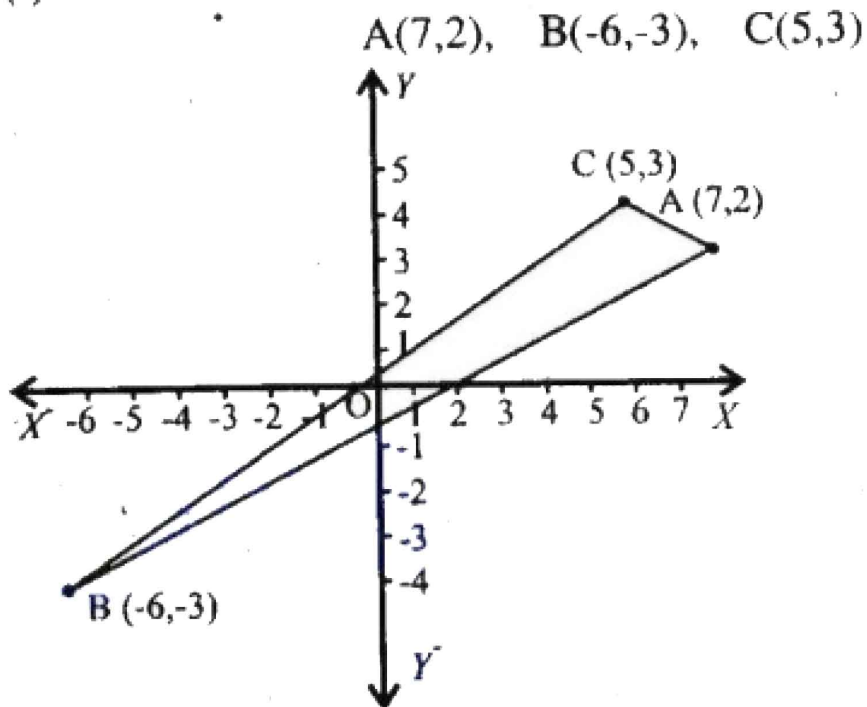
- (i) $(0, 0)$ (ii) $(-5, 0)$ (iii) $(3, 0)$
- (iv) $(0, 4)$ (v) $(0, -6)$

3- Draw the figures with help of the following points on the graph paper.

- (i) $A(7, 2)$, $B(-6, -3)$, $C(5, 3)$
- (ii) $A(0, -7)$, $B(3, -2)$, $C(4, 0)$, $D(5, 6)$, $E(7, 8)$
- (iii) $A(4, 0)$, $B(0, 4)$, $C(-4, 0)$, $D(0, -4)$

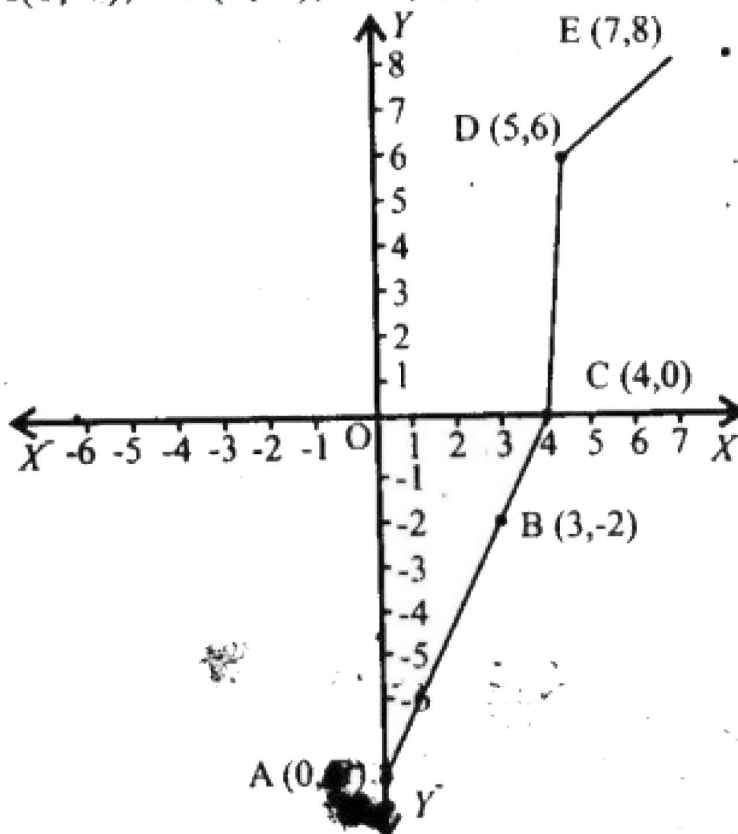
(iv) $A(10,6)$, $B(-10,6)$, $C(-10,-6)$, $D(10,-6)$

Solution: 3(i)



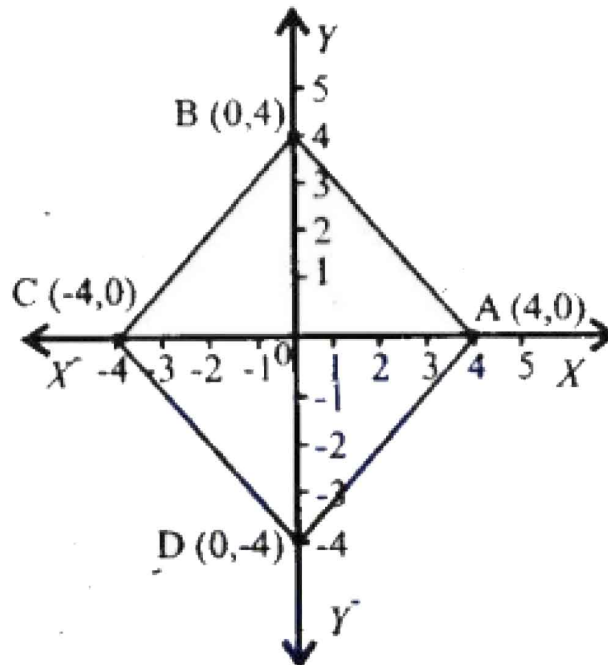
Solution: 3(ii)

$A(0,-7)$, $B(3,-2)$, $C(4,0)$, $D(5,6)$, $E(7,8)$:



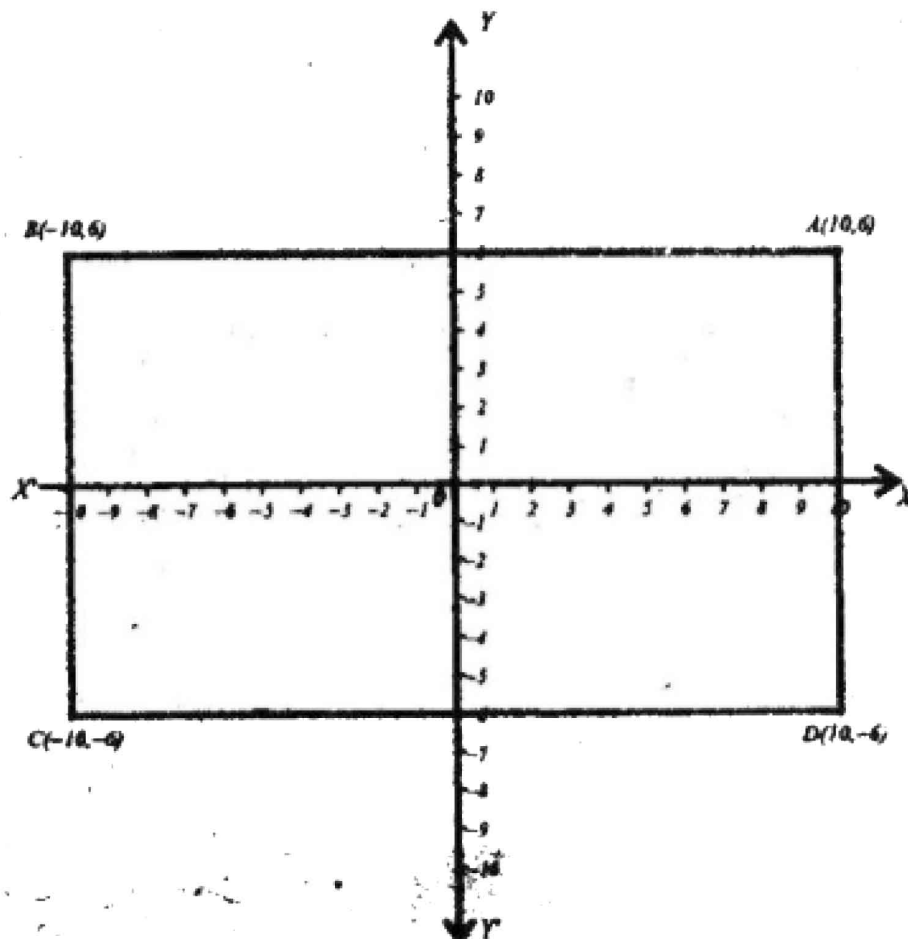
Solution:3(iii)

$A(4,0)$, $B(0,4)$, $C(-4,0)$, $D(0,-4)$:



Solution:3(iv)

$A(10,6)$, $B(-10,6)$, $C(-10,-6)$, $D(10,-6)$:



Exercise 9.2

Draw the graph of:

1. $y = 3x$

2. $y = x + 7$

3. $y = 2x - 3$

4. $y = 4x + 1$

5. $y = -\frac{x}{2} - \frac{3}{2}$

6. $y = x - 1$

7. $y = 2x - 3$

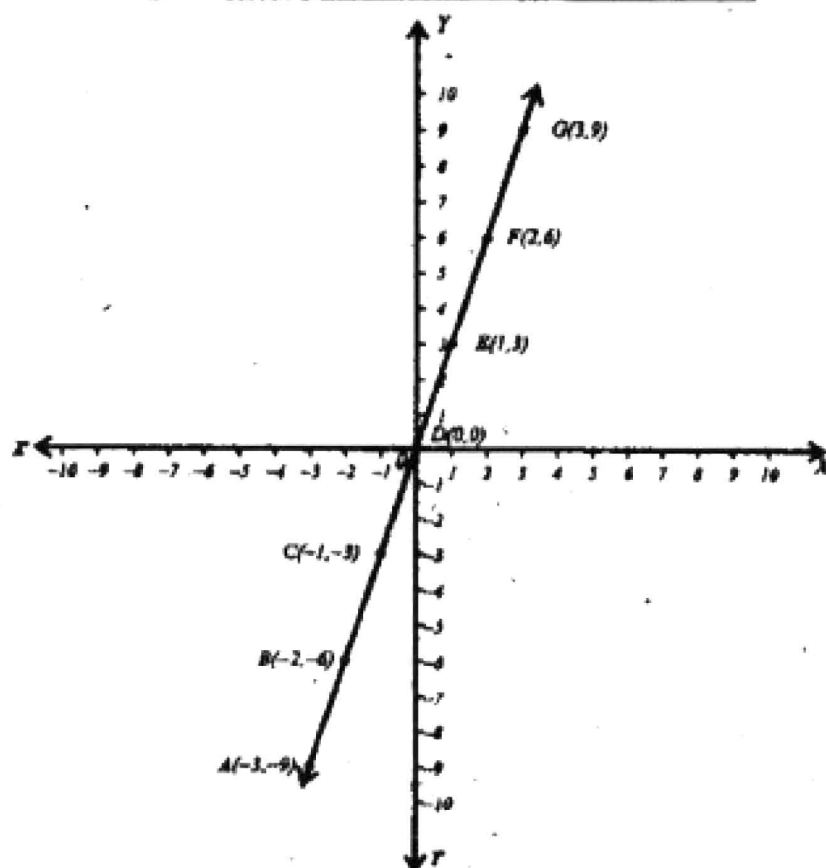
8. $y = 3x + 5$

9. $y = \frac{x}{2}$

Solution: (i) $y = 3x$

Put $x = 0$ in equation (i) then $y = 0$. The graph shows first point is $(0, 0)$. Now we will find different values putting $x = \pm 1, \pm 2, \pm 3$ from the table.

$x =$	-3	-2	-1	0	1	2	3
$y =$	-9	-6	-3	0	3	6	9



Solution: $y = x + 7$

Put $x = 0$ in equation. We will find ordered pair $(0, 7)$.

Now put $x = 1, 2, 3$ and we will find values of y .

$$y = x + 7$$

$$= 1 + 7$$

$$= 8$$

$$y = x + 7$$

$$= 2 + 7$$

$$= 9$$

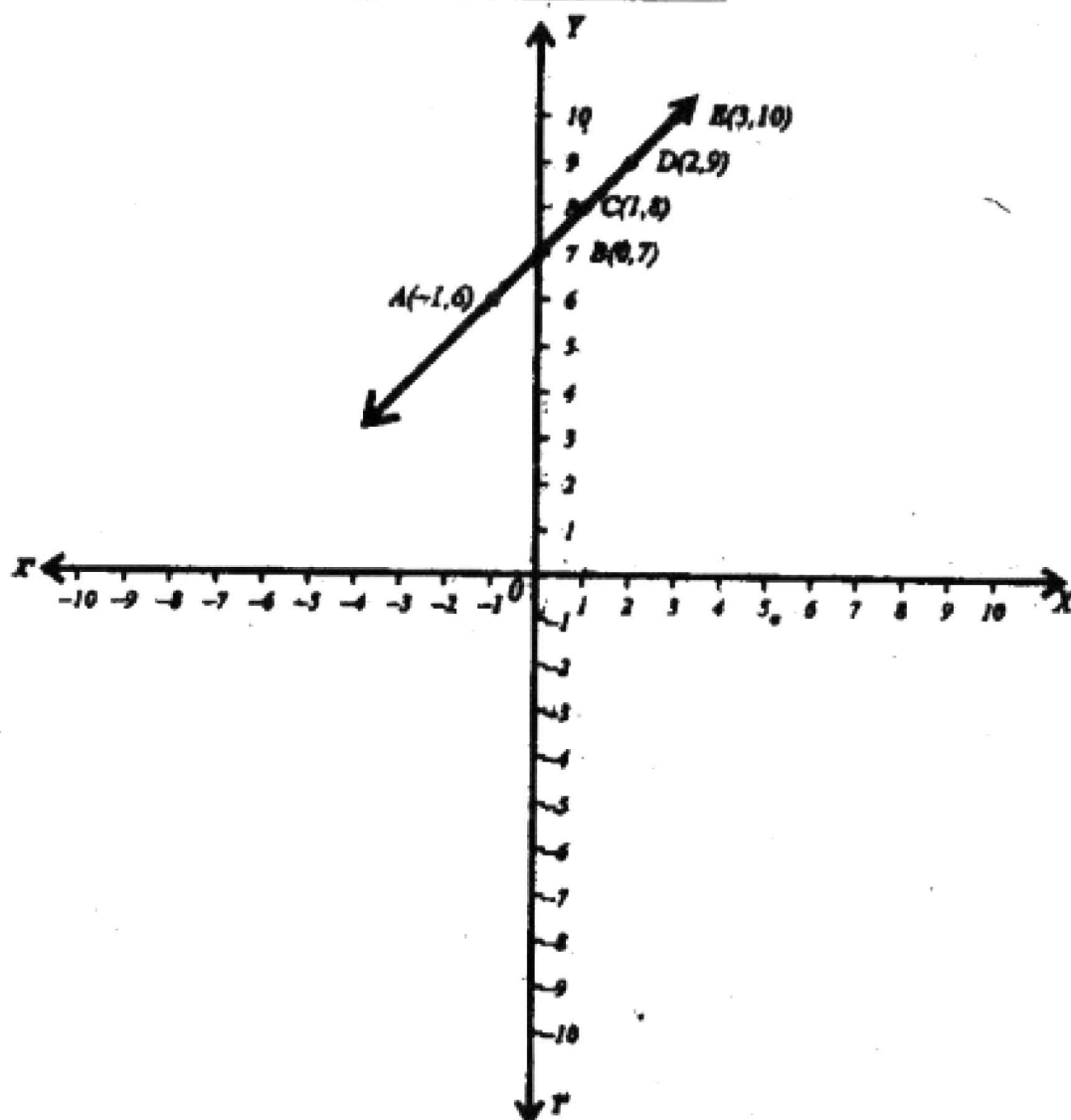
$$y = x + 7$$

$$= 3 + 7$$

$$= 10$$

Table of values of x and y is as under.

$x =$	0	1	2	3	-1
$y =$	7	8	9	10	6



Solution: $y = 2x - 3$

First we will put $x = 0$ in equation

$$y = 2(0) - 3$$

$$y = (0, -3)$$

Similarly we will get values of y putting values of x as

$$x = -2, -1, 1, 2, 3$$

$$y = 2x - 3$$

$$= 2(-2) - 3$$

$$= -4 - 3$$

$$= -7$$

$$y = 2x - 3$$

$$= 2(2) - 3$$

$$= 4 - 3$$

$$= 1$$

$$y = 2x - 3$$

$$y = 2(-1) - 3$$

$$= -2 - 3$$

$$= -5$$

$$y = 2x - 3$$

$$= 2(3) - 3$$

$$= 6 - 3$$

$$= 3$$

$$y = 2x - 3$$

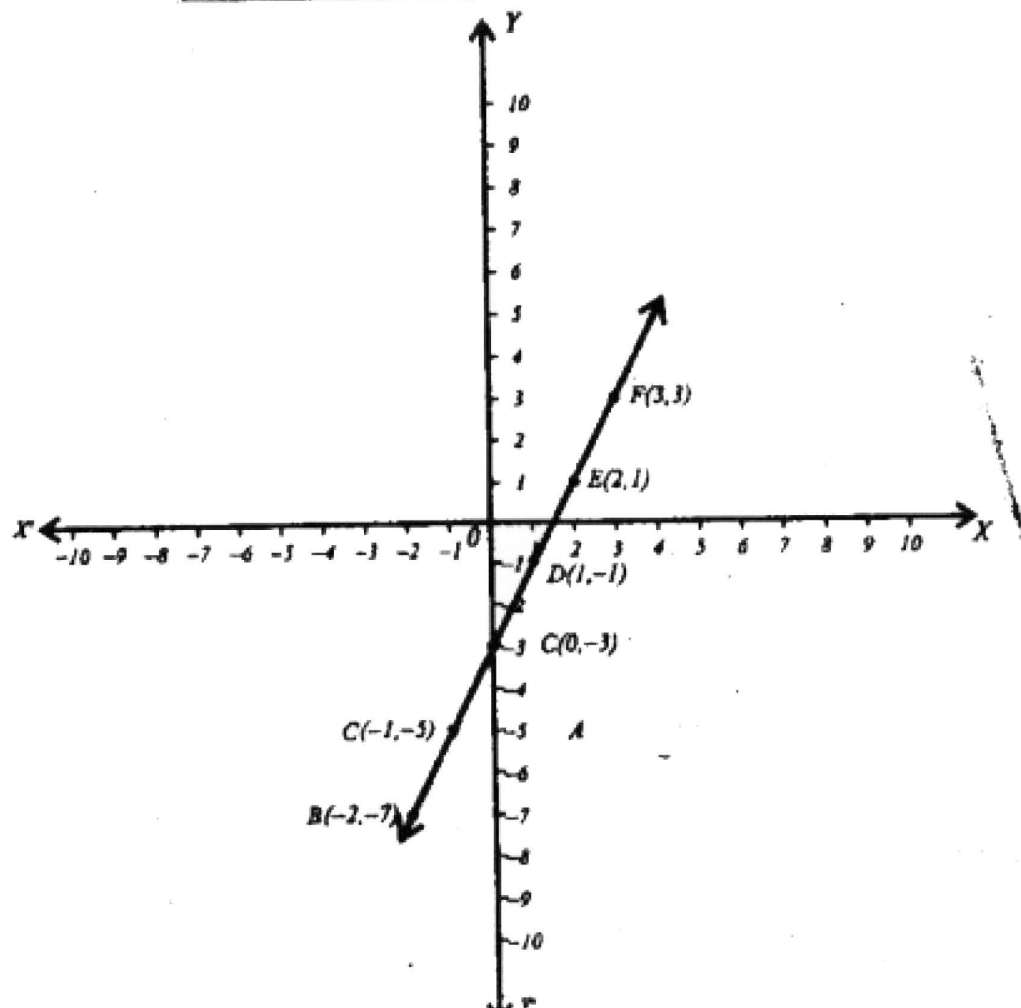
$$= 2(1) - 3$$

$$= 2 - 3$$

$$= -1$$

Table of values of x, y is as under.

$x =$	0	-2	-1	1	2	3
$y =$	-3	-7	-5	-1	1	3



Solution: $y = 4x + 1$

Putting values of $x = 0$

$$y = 4(0) + 1$$

$$y = 0 + 1$$

We will get ordered pair $(0, 1)$

$$y = 4x + 1$$

$$= 4(-2) + 1$$

$$= -8 + 1$$

$$= -7$$

$$y = 4x + 1$$

$$= 4(2) + 1$$

$$= 8 + 1$$

$$= 9$$

$$y = 4x + 1$$

$$= 4(-1) + 1$$

$$= -4 + 1$$

$$= -3$$

$$y = 4x + 1$$

$$= 4(3) + 1$$

$$= 12 + 1$$

$$= 13$$

$$y = 4x + 1$$

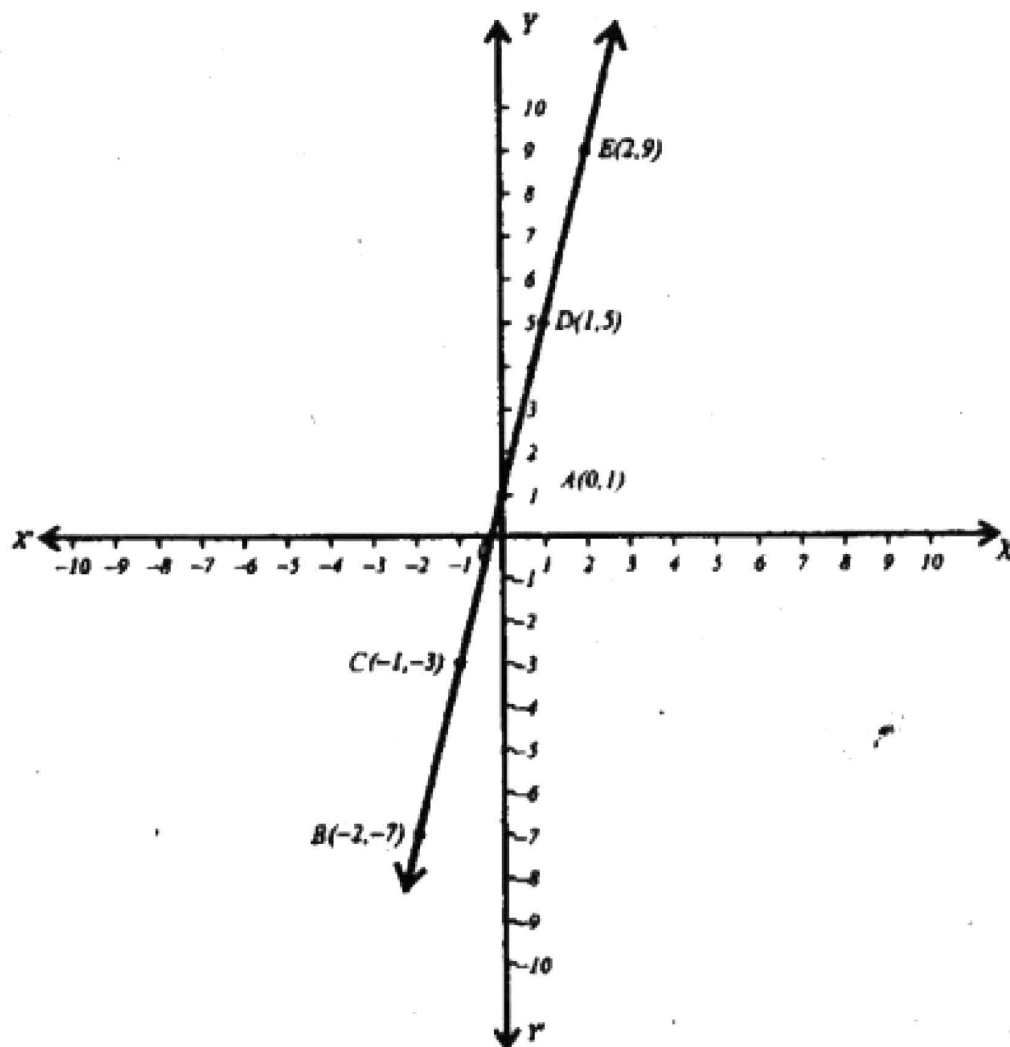
$$= 4(1) + 1$$

$$= 4 + 1$$

$$= 5$$

Now put values of $x = -2, -1, 1, 2, 3$ in equation. Table of values of x and y is as under.

$x =$	0	-2	-1	1	2	3
$y =$	1	-7	-3	5	9	13



Solution:

$$y = -\frac{x}{2} - \frac{3}{2}$$
$$= \frac{-x-3}{2}$$

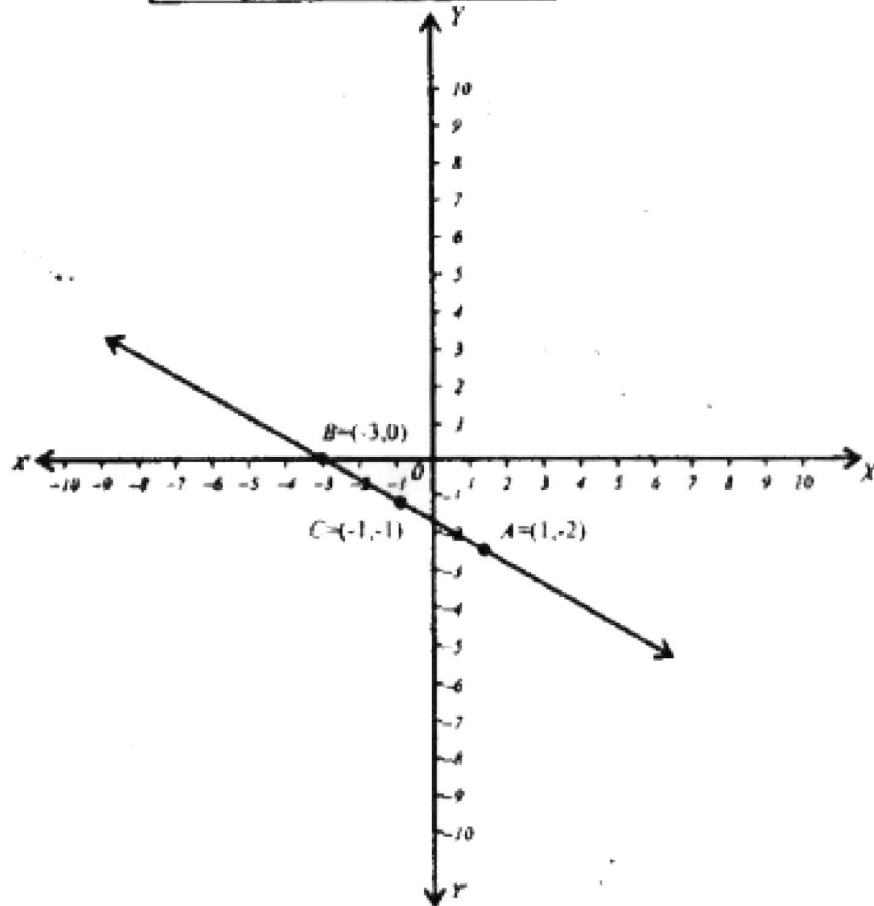
Putting values of $x = -1, -3, 1, -13$ in equation.

$$y = \frac{-x-3}{2} \quad y = \frac{-x-3}{2} \quad y = \frac{-x-3}{2}$$
$$= \frac{-(-1)-3}{2} = \frac{-(-3)-3}{2} = \frac{-1-3}{2}$$
$$= \frac{1-3}{2}$$
$$= \frac{-2}{2} = -1 \quad = \frac{3-3}{2} = 0 \quad = \frac{-4}{2} = -2$$

$$y = \frac{-x-3}{2}$$
$$= \frac{-(-13)-3}{2} = \frac{13-3}{2} = \frac{10}{2} = 5$$

Table of values of x and y is as under.

$x =$	-1	-3	1	-13
$y =$	-1	0	-2	5



Solution: $y = x - 1$

Putting values of $x = 0, -1, 2, 8$ in equation.

$$y = x - 1 \qquad y = x - 1 \qquad y = x - 1$$

$$= 0 - 1 \qquad y = -1 - 1 \qquad = 1 - 1$$

$$= -1 \qquad = -2 \qquad = 0$$

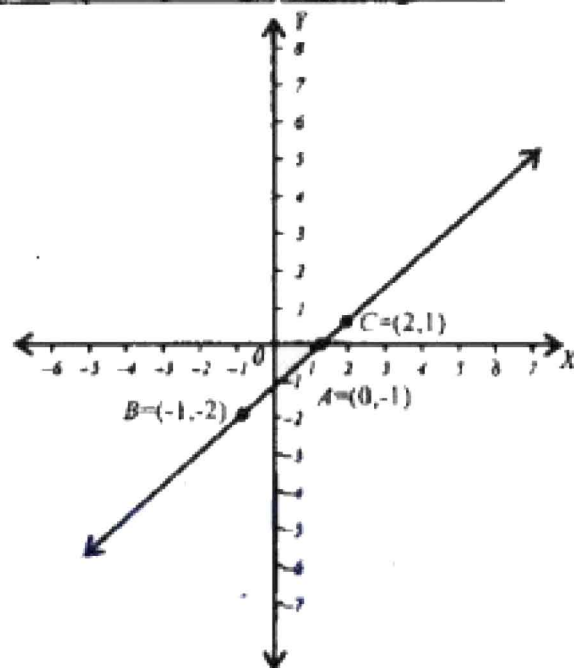
$$y = x - 1 \qquad y = x - 1$$

$$= 2 - 1 \qquad = 8 - 1$$

$$= 1 \qquad = 7$$

Table of values of x and y is as under.

$x =$	0	-1	1	2	8
$y =$	-1	-2	0	1	7



Solution: $y = 2x - 3$

Putting values of $x = 0, -3, -2, -1, 2, 3$ in equation.

$$y = 2(0) - 3$$

$$= 0 - 3$$

$$= -3$$

$$y = 2(-1) - 3$$

$$= -2 - 3$$

$$= -5$$

$$y = 2(3) - 3$$

$$= 6 - 3 = 3$$

$$y = 2(-3) - 3$$

$$y = -6 - 3$$

$$= -9$$

$$y = 2(1) - 3$$

$$= 2 - 3$$

$$= -1$$

$$y = 2(-2) - 3$$

$$= -4 - 3$$

$$= -4 - 3$$

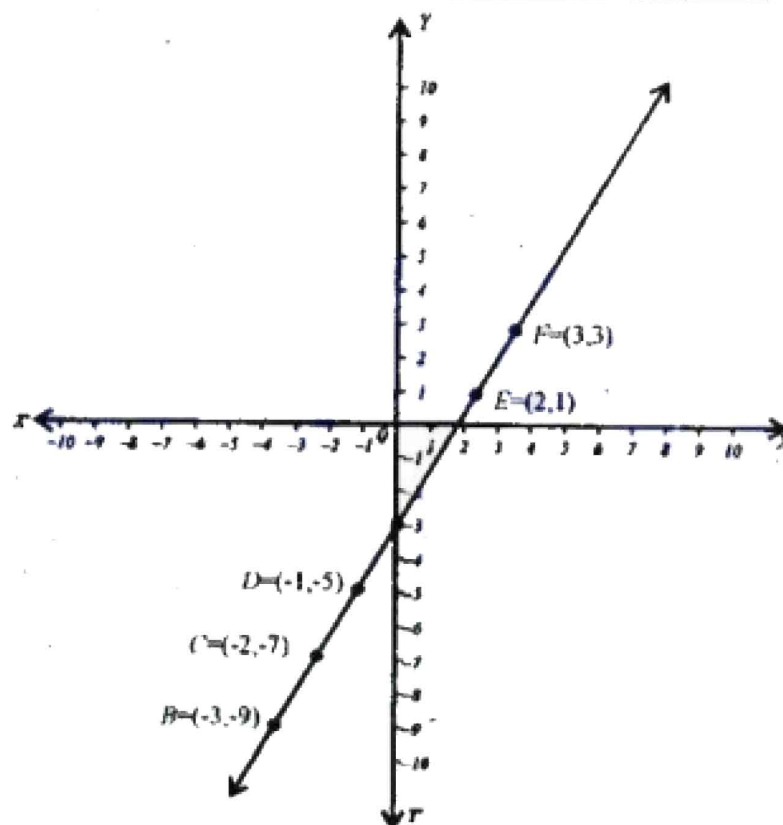
$$y = 2(2) - 3$$

$$= -7$$

$$= 1$$

Table of values of x and y is as under.

$x =$	0	-3	-2	-1	1	2	3
$y =$	-3	-9	-7	-5	-1	1	3



Solution: $y = 3x + 5$

Putting values of $x = 0, -1, -2, 1$ in equation.

$$y = 3x + 5$$

$$y = 3(0) + 5$$

$$= 0 + 5$$

$$= 5$$

$$y = 3x + 5$$

$$= 3(1) + 5$$

$$= 8$$

$$y = 3x + 5$$

$$y = 3(-1) + 5$$

$$= -3 + 5$$

$$= 2$$

$$y = 3x + 5$$

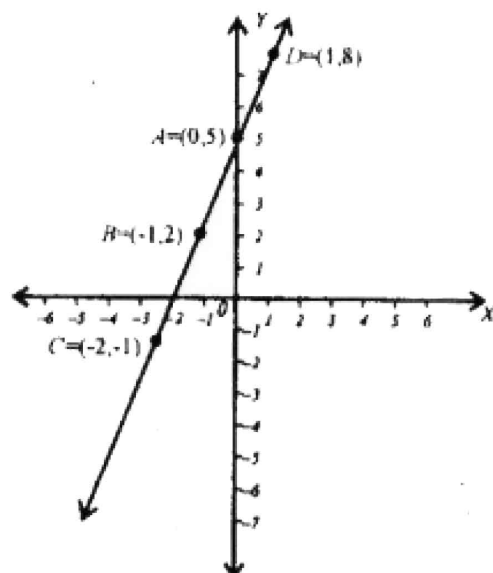
$$y = 3(-2) + 5$$

$$= -6 + 5$$

$$= -1$$

Table of values of x and y is as under.

$x =$	0	-1	-2	1
$y =$	5	2	-1	8



Solution: $y = \frac{x}{2}$

Putting values of $x = 0, 4, 8, 8, 10, 12$ in equation.

$$y = \frac{x}{2} \quad y = \frac{x}{2} \quad y = \frac{x}{2} \quad y = \frac{x}{2}$$

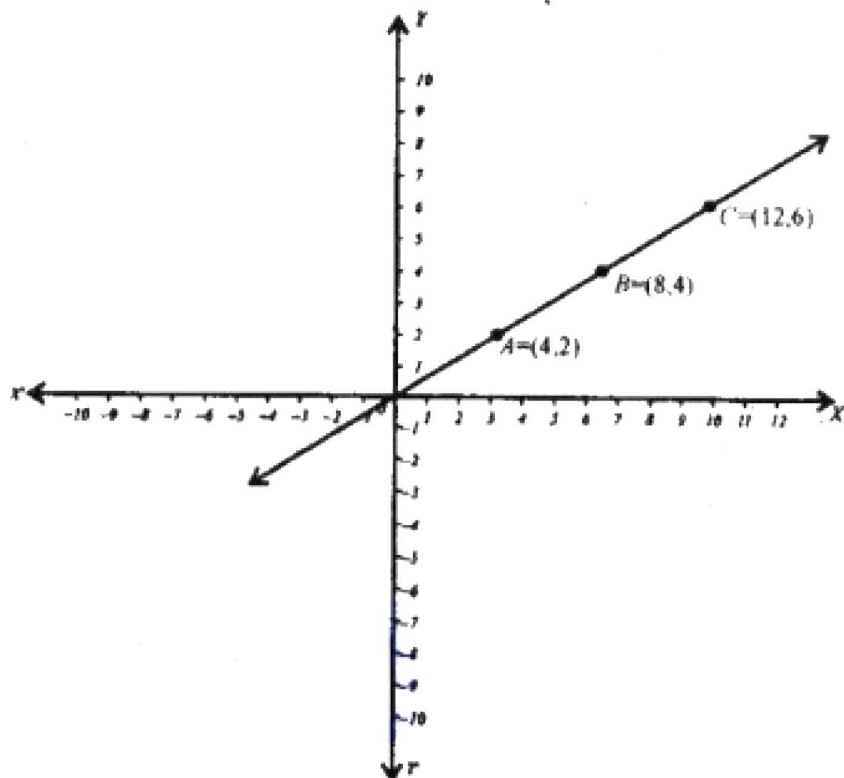
$$= \frac{0}{2} = 0 \quad = \frac{4}{2} = 2 \quad = \frac{8}{2} = 4 \quad = \frac{10}{2} = 5$$

$$y = \frac{x}{2}$$

$$= \frac{12}{2} = 6$$

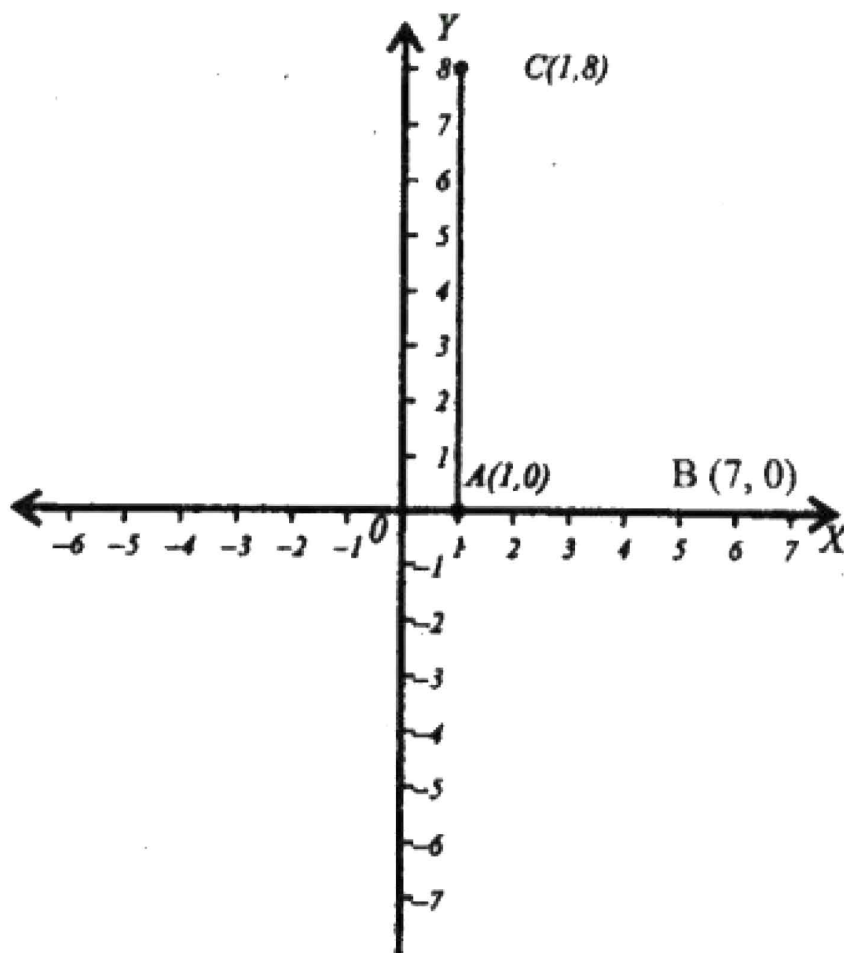
Table of values of x and y is as under.

$x =$	0	4	8	12	10	12



10- Draw the graph by plotting the points

$A(1, 0)$, $B(7, 0)$, $C(1, 8)$



11- Draw the graph from the given tables.

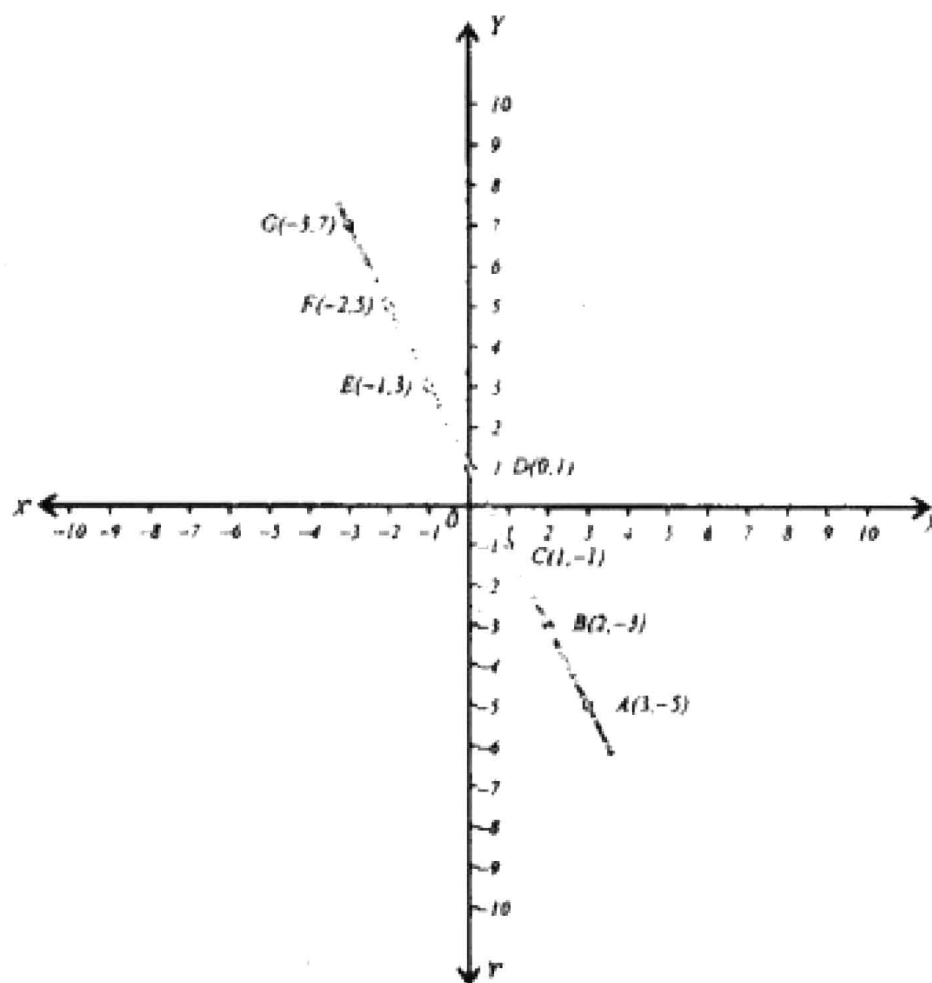
(i)

x	3	2	1	0	-1	-2	-3
y	-5	-3	-1	1	3	5	7

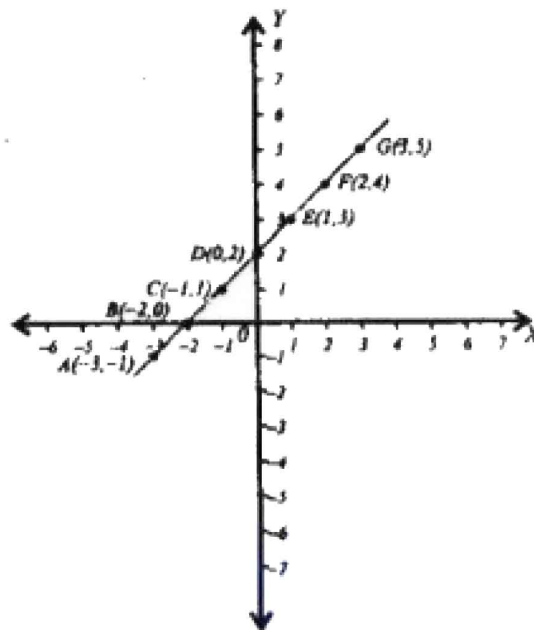
(ii)

x	-3	-2	-1	0	1	2	3
y	-1	0	1	2	3	4	5

Solution:

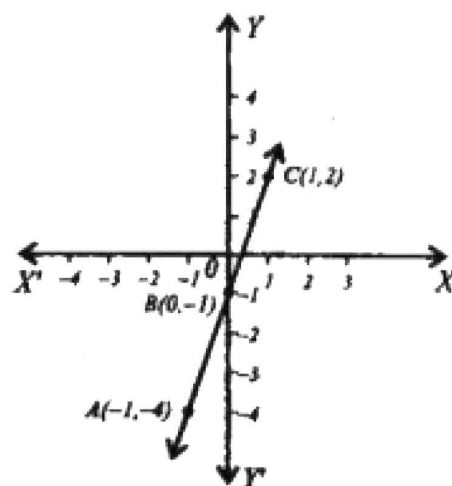


Solution: 11(ii)



12- Identify thorough the given graphs the domain and the range of a function.

Solution:

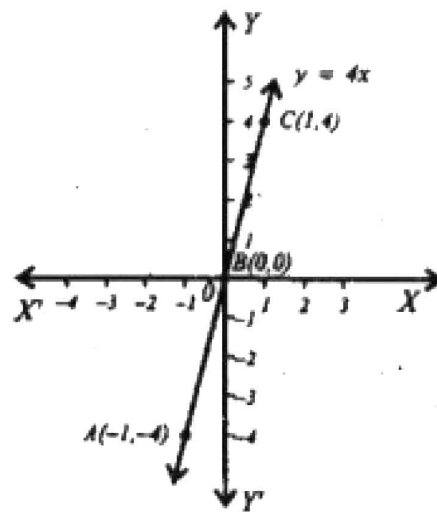


$$y = 3x - 1$$

$$f = \{(-1, -4), (0, -1), (1, 2)\}$$

$$\text{Dom } f = \{-1, 0, 1\}$$

$$\text{Range } f = \{-4, -1, 2\}$$

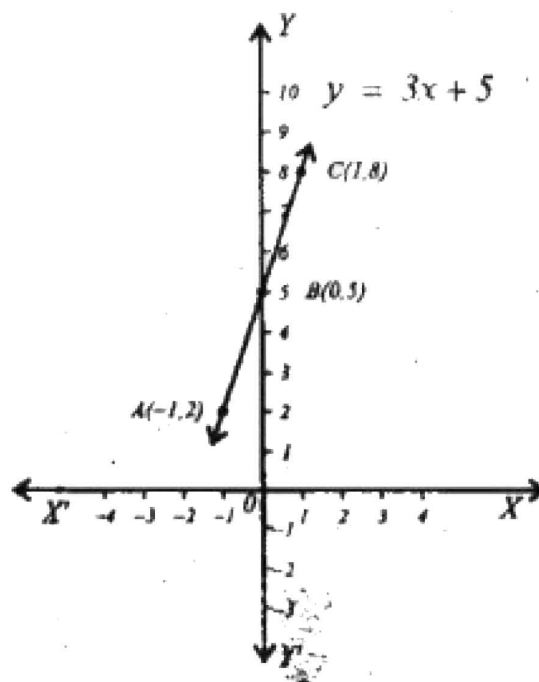
Solution:13

$$y = 4x$$

$$f = \{(-1, -4), (0, 0), (1, 4)\}$$

$$\text{Dom } f = \{-1, 0, 1\}$$

$$\text{Range } f = \{-4, 0, 4\}$$

Solution:14

$$f = \{(-1, 2), (0, 5), (1, 8)\}$$

$$\text{Dom } f = \{-1, 0, 1\}$$

$$\text{Range } f = \{2, 5, 8\}$$

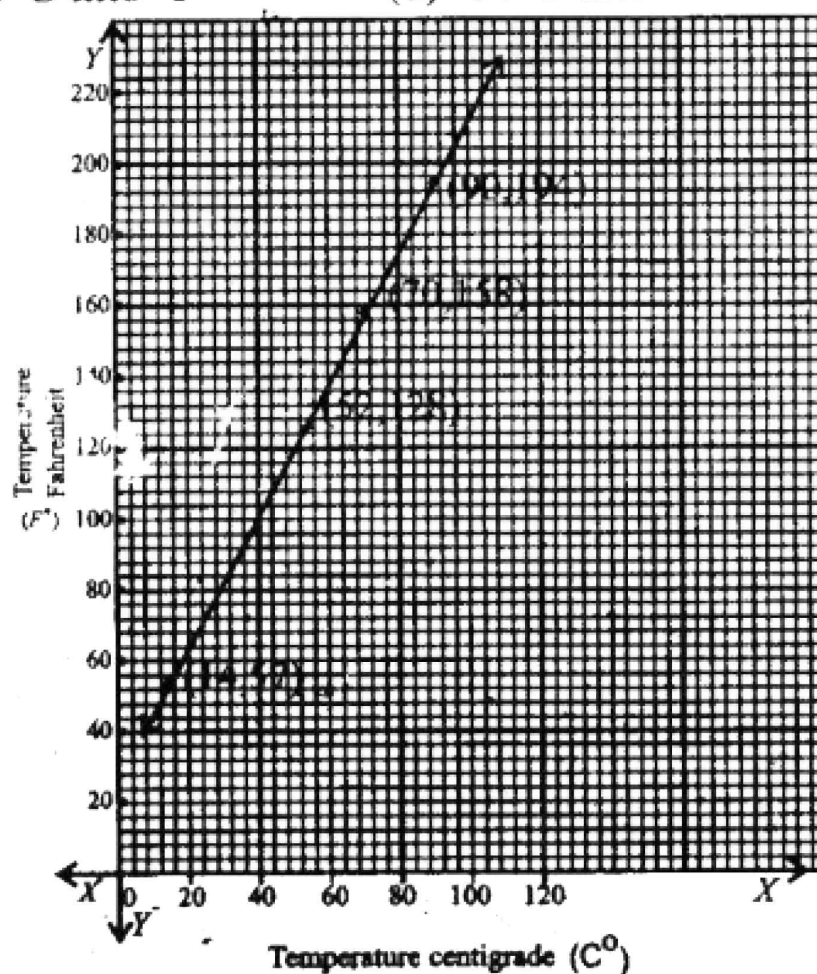
Exercise 9.3

- 1- The table given temperatures in degrees Fahrenheit $^{\circ}\text{F}$ and the equivalent values in degrees Centigrade $^{\circ}\text{C}$.

Temperature in $^{\circ}\text{F}$	57	126	158	194
Temperature in $^{\circ}\text{C}$	14	52	70	90

Plot these points on a graph paper for centigrade values from 0 to 100 and Fahrenheit value from 0 to 220. Let 5 small squares represent 20 units on each axis. Use your graph to convert the following:

- (a) 97°F into $^{\circ}\text{C}$ (b) 127°F into $^{\circ}\text{C}$
 (c) 25°C into $^{\circ}\text{F}$ (d) 80°C into $^{\circ}\text{F}$



- (a) $F^{\circ} = 97^{\circ}$, $C^{\circ} =$ (b) $F^{\circ} = 127^{\circ}$, $C = 36^{\circ}$
 (c) $C = 25^{\circ}$, $F =$ (d) $C = 80^{\circ}$, $F =$
 (a) $F = 97^{\circ}$ then $C = 36^{\circ}$

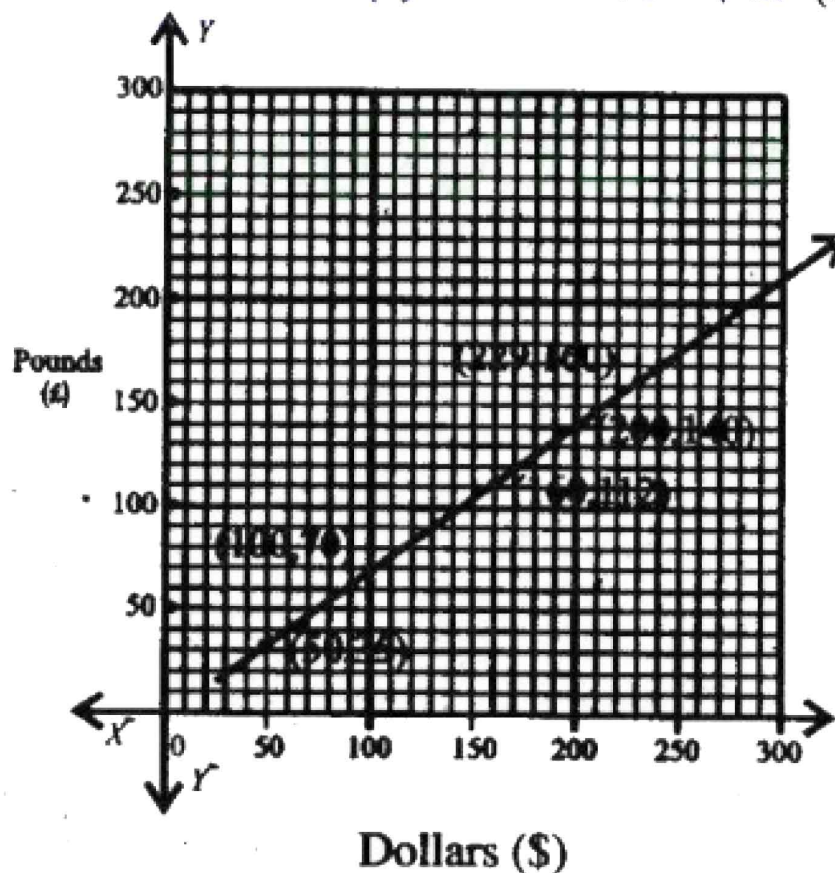
- (b) $F = 127^{\circ}$ then $C = 53^{\circ}$
 (c) $C = 25^{\circ}$ then $F = 77^{\circ}$
 (d) $C = 80^{\circ}$ then $F = 176^{\circ}$

2- *The table shows the conversion from US Dollar (\$) to Pounds (£) for various amounts of money.*

\$	50	100	200
£	35	70	140

Plot these points on a graph paper and draw a straight line to pass through them. Let 5 small squares represent 50 units on each axis. Use your graph to convert the following:

- (a) 160 dollars into £ (b) 96 dollars into £
 (c) 120 £ into dollars (d) 76£ into dollars
 $\$160 = \text{£} \dots$ (b) $\$160 = \text{£} \dots$ (a)
 $\text{£}160 = \$ \dots$ (d) $\text{£}160 = \$ \dots$ (c)



From graph:

- (a) $\$160 = \text{£} 112$
 (b) $\$160 = \text{£} 112$
 (c) $\text{£}160 = \$ 229$

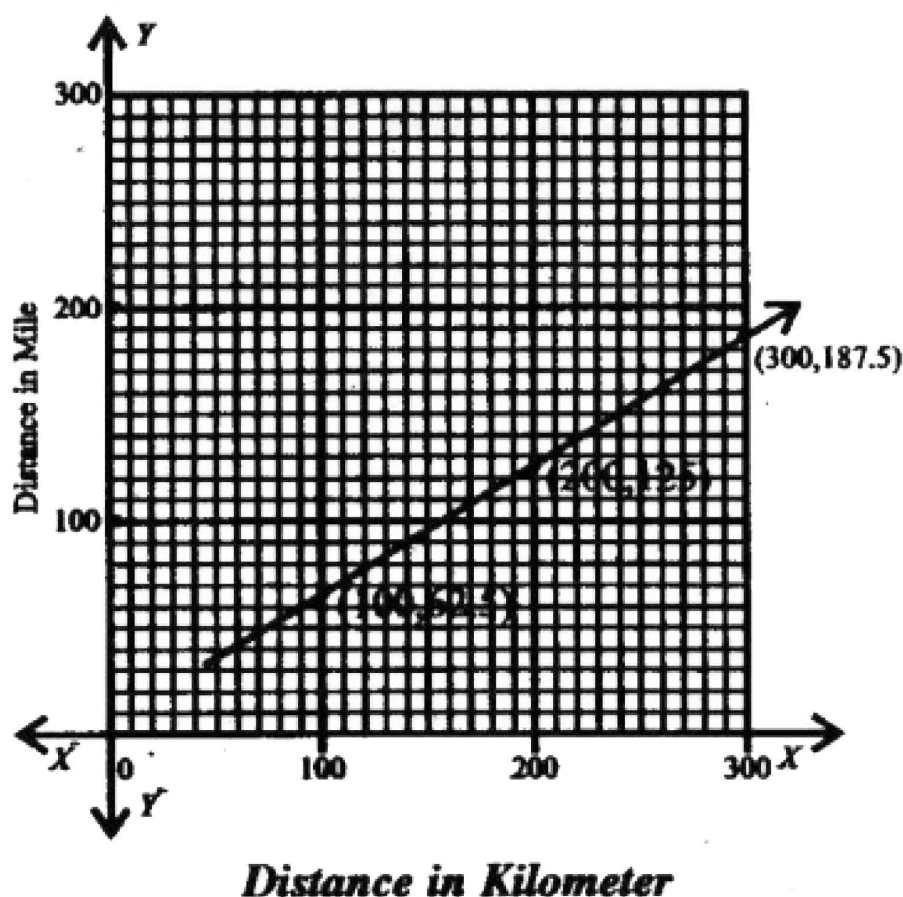
(d) £160 = \$ 229

- 3- The table below gives various distances in kilometers with the equivalent values in miles.

Kilometers	0	100	200	300
Miles	0	62.5	125	187.5

Plot these values on a graph paper taking 10 small squares equal to 100 kilometers on x-axis and 10 small squares equal to 100 miles on y-axis. Use your graph to convert the following:

- 140 kilometers into miles.
- 175 kilometers into miles.
- 50 miles into kilometers.
- 100 miles into kilometers.



From graph:

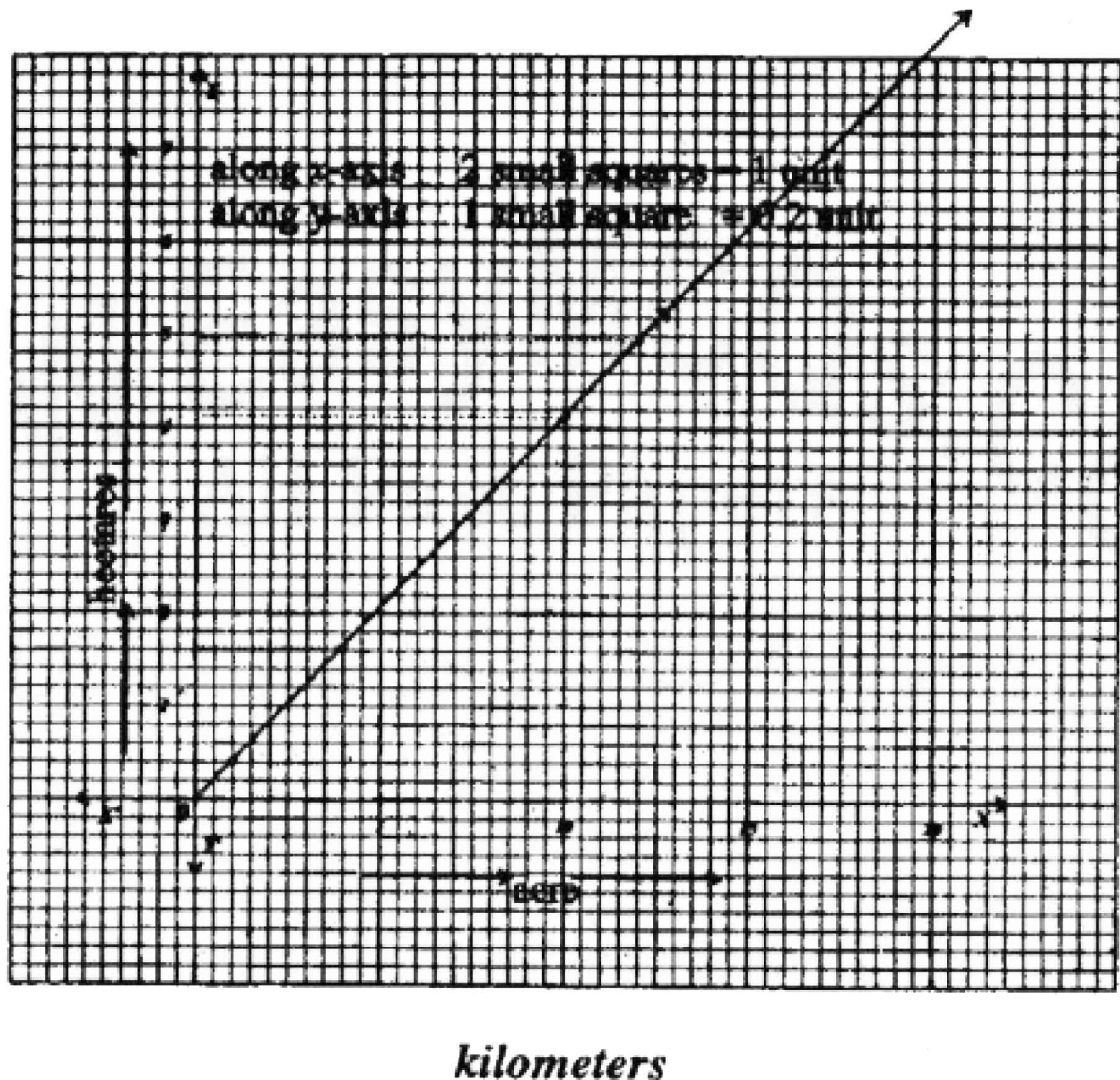
Answers:

- 140 km = 87.5 miles
- 175 km = 109.4 miles
- 50 miles = 80 km

(d) 100 miles = 160 km

4- Use the graph in article 9.2.3 to convert:

- (a) 6 acres = ... Hectares
- (b) 18 acres = ... Hectares
- (c) 6.0702 hectare = ...acres.
- (d) 24 acres = ... Hectares
- (e) 11.3311 hectares = ... acres.



From graph:

- (a) 6 acres = 2.43 hectares
- (b) 18 acres = 7.3 hectares
- (c) 6.0702 hectares = 15 acres
- (d) 24 acres = 9.7 hectares
- (e) 11.3311 hectares = 28.0 acres