

Exercise 8.1 (Solutions) Mathematics 9th (Science) Punjab Textbook Board



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برائے مہربانی نوٹس کاپی اور استعمال کرتے وقت اس لائیسنس کا خیال رکھیں۔

**Q. 1** Determine the quadrant of the coordinate plane in which the following points lie: P(-4,3), Q(-5,-2), R(2,2) and S(2,-6).

**Solution:** P(-4,3) is in IInd quadrant.

Q(-5,-2) is in IIIrd quadrant.

R(2,2) is in Ist quadrant.

S(2,-6) is in IVth quadrant.

**Q.** 2(i) Draw the graph of each of x = 2. *Solution:* 



**Q. 2(ii)** Draw the graph of each of x = -3. *Solution:* 



**Q. 2(iii)** Draw the graph of each of y = -1. *Solution:* 



**Q.** 2(iv) Draw the graph of each of y = 3. *Solution:* 



**Q.**  $2(\mathbf{v})$  Draw the graph of each of y = 0. *Solution:* 



**Q.** 2(vi) Draw the graph of each of x = 0. *Solution:* 



**Q.** 2(vii) Draw the graph of each of y = 3x.

## Solution:

When x = 0 then y = 0.

When x = 1 then y = 3.

So, the points (0,0) and (1,3) lies on the graph.



**Q.** 2(viii) Draw the graph of each of -y = 2x.

# Solution:

When x = 0 then y = 0.

When x = 1 then y = -2.

So the points (0,0) and (1,-2) lies on the graph.



**Q.** 2(ix) Draw the graph of each of  $\frac{1}{2} = x$ .

Solution:



#### **Q.** $2(\mathbf{x})$ Draw the graph of 3y = 5x.

### Solution:

When x = 0then y = 0. When x = -3then 3y = -15 $\Rightarrow y = -\frac{15}{3}$ .  $\Rightarrow y = -5$ 

So the points (-3, -5) and (0, 0) lies on the graph.



# **Q.** 2(xi) Draw the graph of 2x - y = 0.

### Solution:

 $2x-y=0 \Rightarrow y=2x$ . When x=0then y=0. When x=1then y=2. So the points (0,0) and (1,2) lies on the graph.



# **Q.** 2(xii) Draw the graph of 2x - y = 2.

# Solution:



**Q.** 2(xiii) Draw the graph of x-3y+1=0. *Solution:* 

x-3y+1=0  $\Rightarrow y = \frac{1}{3}x + \frac{1}{3}$ When x = -1then y = 0. When x = 2then y = 1. So the points (2,1) and (5,2) lies on the graph.



# **Q.** 2(xiv) Draw the graph of 3x - 2y + 1 = 0. *Solution:*



**Q.** 3(i) Is the line 2x-1=3 is parallel to x-axis or y-axis. *Solution:* 

 $2x - 1 = 3 \implies 2x = 3 + 1$  $\implies 2x = 4 \implies x = 2.$ 

The above line is parallel to y - axis.

**Q.** 3(ii) Is the line x+2=-1 is parallel to x-axis or y-axis. *Solution:* 

 $x+2=-1 \implies x=-2-1$  $\implies x=-3$ 

The above line is parallel to y - axis.

**Q.** 3(iii) Is the line 2y+3=2 is parallel to x-axis or y-axis. *Solution:* 

$$2y+3=2 \implies 2y=-3+2$$
$$\implies 2y=-1 \implies y=-\frac{1}{2}.$$

The above line is parallel to x - axis.

**Q.** 3(iv) Is the line x + y = 0 is parallel to x-axis or y-axis. *Solution:* 

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

The above line is neither parallel to x-axis nor parallel to y-axis.

**Q.**  $3(\mathbf{v})$  Is the line 2x - 2y = 0 is parallel to x-axis or y-axis.

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

This above line is neither parallel to x - axis nor parallel to y - axis.

**Q.** 4(a) Find the value of *m* and *c* of the following lines by expressing 2x+3y-1=0 in the form of y = mx+c.

Solution:

$$2x+3y-1=0$$
  

$$\Rightarrow 3y=-2x+1$$
  

$$\Rightarrow y=-\frac{2}{3}x+\frac{1}{3}$$

Compare it with y = mx + c

$$\Rightarrow m = -\frac{2}{3} \text{ and } c = \frac{1}{3}.$$

**Q.** 4(b) Find the value of *m* and *c* of the following lines by expressing x-2y=-2 in the form of y=mx+c. Solution:

$$x-2y = -2$$
  

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

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

$$\Rightarrow y = \frac{1}{2}x + 1$$
  
Compare it with  $y = mx + c$   
$$\Rightarrow m = \frac{1}{2} \text{ and } c = 1.$$

**Q.** 4(c) Find the value of *m* and *c* of the following lines by expressing 3x + y - 1 = 0 in the form of y = mx + c. Solution:

$$3x + y - 1 = 0$$
$$\Rightarrow y = -3x + 1$$

Compare it with y = mx + c

$$\Rightarrow$$
  $m = -3$  and  $c = 1$ .

**Q.** 4(d) Find the value of *m* and *c* of the following lines by expressing 2x - y = 7 in the form of y = mx + c.

## Solution:

$$2x - y = 7$$
  

$$\Rightarrow -y = -2x + 7$$
  

$$\Rightarrow -y = -2x + 7$$
  

$$\Rightarrow y = 2x - 7$$

Compare it with y = mx + c

$$\implies m = 2$$
 and  $c = -7$ .

**Q.** 4(e) Find the value of *m* and *c* of the following lines by expressing 3-2x+y=0 in the form of y = mx+c. Solution:

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

Compare it with y = mx + c

 $\Rightarrow$  m = 2 and c = -3

**Q.** 4(f) Find the value of *m* and *c* of the following lines by expressing 2x = y + 3 in the form of y = mx + c.

Solution:

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

Compare it with y = mx + c

$$\Rightarrow$$
 m = 2 and c = -3.

**Q.** 5(i) Verify whether the point (2, 3) lies on the line 2x - y + 1 = 0 or not.

### Solution:

2x - y + 1 = 0

Put (2,3) in the above equation, we get

$$2(2)-3+1=0$$
$$\Rightarrow 4-3+1=0.$$

This is not true, hence (2,3) does not lie on the given line.

**Q.** 5(ii) Verify whether the point (0,0) lies on the line 2x - y + 1 = 0 or not.

# Solution:

2x - y + 1 = 0

Put (0,0) in the above equation, we get

$$2(0) - 0 + 1 = 0$$
  
$$\Rightarrow 0 - 0 + 1 = 0$$
  
$$\Rightarrow 1 \neq 0.$$

This is not true, hence (0,0) does not lie on the given line.

**Q. 5(iii)** Verify whether the point (-1,1) lies on the line 2x - y + 1 = 0

or not.

Solution:

2x - y + 1 = 0

Put (-1,1) in the above equation, we get

$$2(-1)-1+1=0$$
$$\Rightarrow -2-1+1=0$$
$$\Rightarrow -2 \neq 0$$

This is not true, hence (-1,1) does not lie on the given line.

**Q.** 5(iv) Verify whether the point (2,5) lies on the line 2x - y + 1 = 0 or not.

Solution:

$$2x - y + 1 = 0$$

Put (2,5) in the above equation, we get

$$2(2)-5+1=0$$
  

$$\Rightarrow 4-5+1=0$$
  

$$\Rightarrow 0=0.$$

This is true, hence (2,5) lie on the given line.

**Q.** 5(v) Verify whether the point (5,3) lies on the line 2x - y + 1 = 0 or not.

# Solution:

2x - y + 1 = 0

Put (5,3) in the above equation, we get

$$2(5)-3+1=0$$
  

$$\Rightarrow 10-3+1=0$$
  

$$\Rightarrow 8=0.$$

This is not true, hence (5,3) does not lie on the given line.

### **Mathematics 9**

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