

**RD Sharma**  
**Solutions**  
**Class 11 Maths**  
**Chapter 23**  
**Ex 23.2**

### Straight Lines Ex 23.2 Q1

Let the equation of the line be:

$$y - y_1 = m(x - x_1)$$

Now,

$$m = 0 \quad [\because \text{Parallel lines have equal slopes, the slope of } x\text{-axis is } 0]$$

$$(x_1, y_1) = (3, -5)$$

$$\therefore y - y_1 = m(x - x_1)$$

$$y - (-5) = 0(x - 3)$$

$$y + 5 = 0$$

### Straight Lines Ex 23.2 Q2

The slope of  $x$ -axis is 0, any line perpendicular to it will have

$$\text{slope} = \frac{-1}{0}$$

Also the required line is passing through the point  $(-2, 0)$

(because it is given it has  $x$ -intercept is  $-2$ )

The required equation of line is

$$y - y_1 = m(x - x_1)$$

$$\text{where } m = \frac{-1}{0}, (x_1, y_1) \Rightarrow (-2, 0)$$

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

$$y - 0 = \frac{-1}{0}(x + 2)$$

$$-(x + 2) = 0$$

$$x + 2 = 0$$

$$x = -2$$

### Straight Lines Ex 23.2 Q3

The slope of  $x$ -axis is 0

Any line parallel to  $x$ -axis will also have the same slope.

therefore  $m = 0$

Also line has  $y$ -intercept, ie.  $(0, b)$

$$\Rightarrow (0, -2) \Rightarrow (x_1, y_1)$$

The required equation of the line is  $y - y_1 = m(x - x_1)$

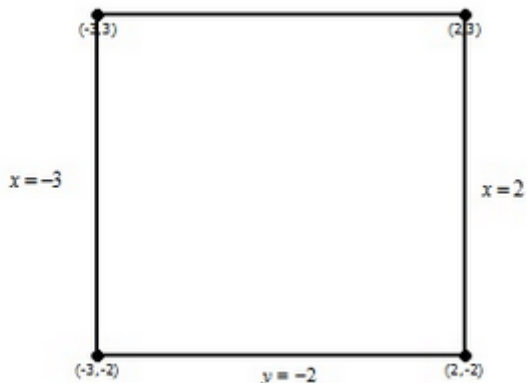
$$y - (-2) = 0(x - 0)$$

$$y + 2 = 0$$

$$y = -2$$

### Straight Lines Ex 23.2 Q4

The figure with the lines  $x = -3, x = 2, y = -2, y = 3$  is as follows:



From the figure, the co-ordinates of the vertices of the square are  $(2, 3), (-3, 3), (-3, -2), (2, -2)$ .

### Straight Lines Ex 23.2 Q5

Slope of a line parallel to  $x$ -axis = 0

Since the line passes through  $(4, 3)$ ,

The required equation of the line parallel to  $x$ -axis is

$$y - y_1 = m(x - x_1)$$

$$y - (3) = 0(x - 4)$$

$$y - 3 = 0$$

$$y = 3$$

Slope of a line perpendicular to  $x$ -axis =  $-\frac{1}{0}$

The required equation of the line perpendicular to  $x$ -axis is

$$y - y_1 = m(x - x_1)$$

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

$$x - 4 = 0$$

$$x = 4$$

### Straight Lines Ex 23.2 Q6

Let  $x = \lambda$  be the line equidistant from

$x = -2$  and  $x = 6$

$$\text{so } \left| \frac{-2-\lambda}{\sqrt{1}} \right| = \left| \frac{\lambda-6}{\sqrt{1}} \right|$$

$$-2 - \lambda = \lambda - 6$$

$$4 = 2\lambda$$

$$\therefore \lambda = 2$$

$\therefore$  The line equidistant from  $x = -2$  and  $x = 6$  is  $x = 2$

---

### **Straight Lines Ex 23.2 Q7**

A line which is equidistant from two other lines, must have the same slope.

The slope of  $y = 10$  and  $y = -2$  is 0, ie line parallel to x-axis.

The required line is also parallel to  $y = 10$  and  $y = -2$

$$\therefore m = 0$$

Also, the required line will pass from the mid-point of the line joining

$(0, -2)$  and  $(0, 10)$

Coordinates of this point will be  $(0, \frac{10-2}{2}) = (0, \frac{8}{2}) = (0, 4)$

$\therefore$  The equation of the require line is:

$$y-4=0(x-x_1)$$

$$\Rightarrow y = 4$$