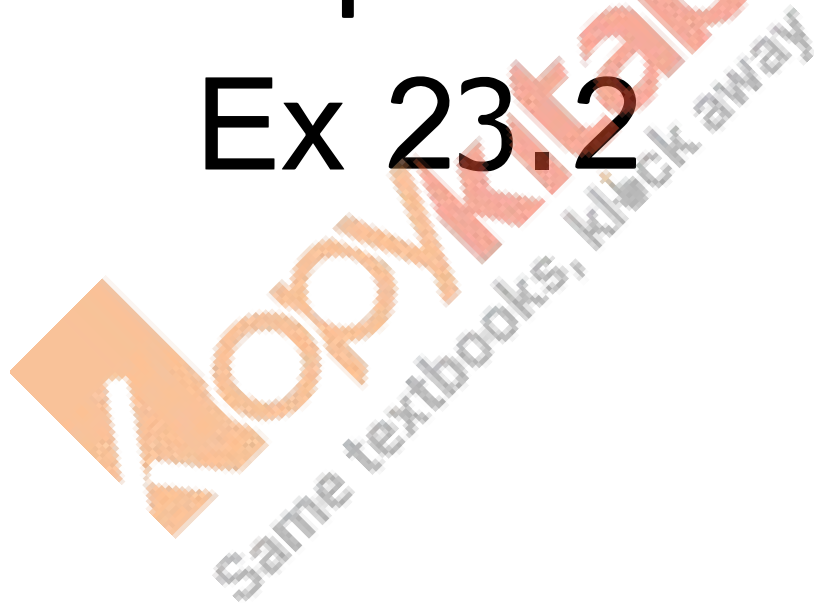# RD Sharma Solutions

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,

$m = 0$ [∵ Parallel lines have equal slopes, the slope of x-axis is 0]

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

∴ $y - y_1 = m(x - x_1)$

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

$y + 5 = 0$

Straight Lines Ex 23.2 Q2

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

slope $= \dfrac{-1}{0}$

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

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

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

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

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

$-(x + 2) = 0$

$x + 2 = 0$

$x = -2$

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. $(0, b)$

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

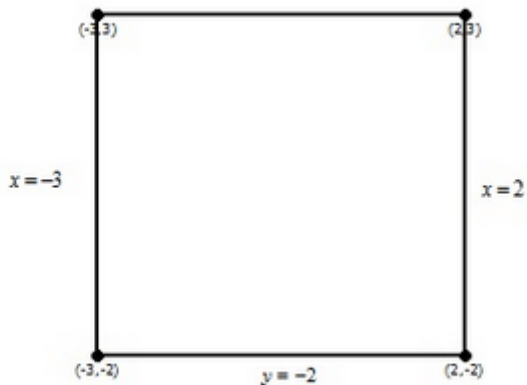The required equation of the line is $y - y_1 = m(x - x_1)$

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

$y + 2 = 0$

$y = -2$

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-axes 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 $= \dfrac{-1}{0}$

The required equation of the line perpendicular to x-axis is
$y - y_1 = m(x - x_1)$
$y - 3 = \dfrac{-1}{0}(x - 4)$
$x - 4 = 0$
$x = 4$

Straight Lines Ex 23.2 Q6

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

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

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

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

$\qquad 4 = 2\lambda$

$\therefore \ \lambda = 2$

$\therefore$ 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 $y = -2$

$\therefore \qquad m = 0$

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 $(0, \dfrac{10-2}{2}) = (0, \dfrac{8}{2}) = (0, 4)$

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

$\qquad y - 4 = 0\left(x - x_1\right)$

$\qquad \Rightarrow y = 4$