EXERCISE 23.2

1. Find the equation of the line parallel to x–axis and passing through (3, –5).
Solution:
Given: A line which is parallel to x–axis and passing through (3, –5)
By using the formula,
The equation of line: $[y – y_1 = m(x – x_1)]$
We know that the parallel lines have equal slopes
And, the slope of x–axis is always 0
Then
The slope of line, m = 0
Coordinates of line are $(x_1, y_1) = (3, –5)$
The equation of line = $y – y_1 = m(x – x_1)$
Now, substitute the values, we get
$y – (– 5) = 0(x – 3)$
$y + 5 = 0$
∴ The equation of line is $y + 5 = 0$

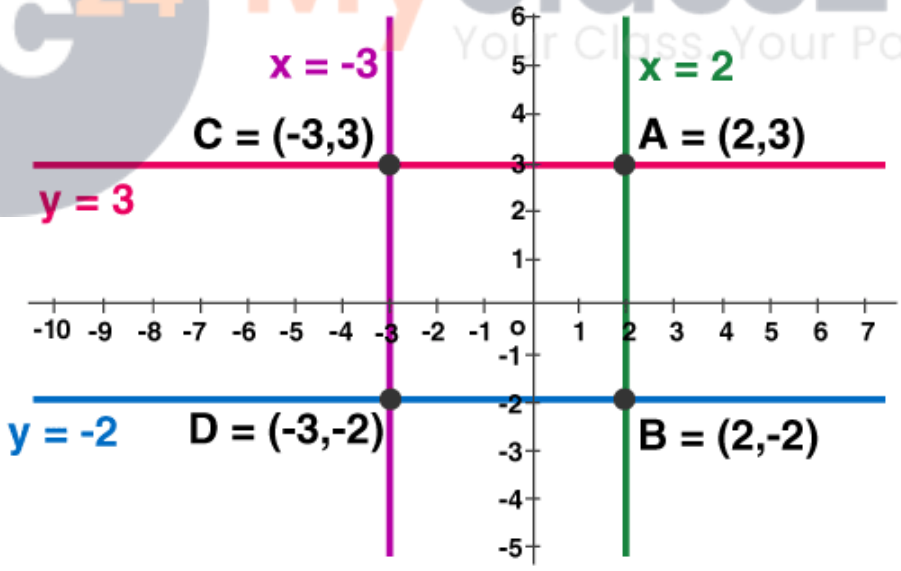
2. Find the equation of the line perpendicular to x–axis and having intercept – 2 on x–axis.
Solution:
Given: A line which is perpendicular to x–axis and having intercept –2
By using the formula,
The equation of line: $[y – y_1 = m(x – x_1)]$
We know that, the line is perpendicular to the x–axis, then x is 0 and y is –1.
The slope of line is, $m = y/x$
$= -1/0$

It is given that x–intercept is –2, so, y is 0.
Coordinates of line are $(x_1, y_1) = (–2, 0)$
The equation of line = $y – y_1 = m(x – x_1)$
Now, substitute the values, we get
$y – 0 = (-1/0) (x – (– 2))$
$x + 2 = 0$
∴ The equation of line is $x + 2 = 0$

3. Find the equation of the line parallel to x–axis and having intercept – 2 on y – axis.
Solution:

Given: A line which is parallel to x–axis and having intercept –2 on y – axis
By using the formula,
The equation of line: [$y - y_1 = m(x - x_1)$]
The parallel lines have equal slopes,
And, the slope of x–axis is always 0
Then
The slope of line, m = 0
It is given that intercept is –2, on y – axis then
Coordinates of line are $(x_1, y_1) = (0, -2)$
The equation of line is $y - y_1 = m(x - x_1)$
Now, substitute the values, we get
$y - (-2) = 0\ (x - 0)$
$y + 2 = 0$
∴ The equation of line is $y + 2 = 0$

4. Draw the lines x = –3, x = 2, y = –2, y = 3 and write the coordinates of the vertices of the square so formed.
Solution:
Given: x = –3, x = 2, y = –2 and y = 3



∴ The Coordinates of the square are: A(2, 3), B(2, –2), C(–3, 3), and D(–3, –2).

5. Find the equations of the straight lines which pass through (4, 3) and are respectively parallel and perpendicular to the x–axis.
Solution:

Given: A line which is perpendicular and parallel to x–axis respectively and passing through (4, 3)
By using the formula,
The equation of line: $[y - y_1 = m(x - x_1)]$
Let us consider,

Case 1: When Line is parallel to x–axis
The parallel lines have equal slopes,
And, the slope of x–axis is always 0, then
The slope of line, m = 0
Coordinates of line are $(x_1, y_1) = (4, 3)$
The equation of line is $y - y_1 = m(x - x_1)$
Now substitute the values, we get
$y - (3) = 0(x - 4)$
$y - 3 = 0$

Case 2: When line is perpendicular to x–axis
The line is perpendicular to the x–axis, then x is 0 and y is – 1.
The slope of the line is, $m = y/x$
$= -1/0$
Coordinates of line are $(x_1, y_1) = (4, 3)$
The equation of line = $y - y_1 = m(x - x_1)$
Now substitute the values, we get
$y - 3 = (-1/0)(x - 4)$
$x = 4$
∴ The equation of line when it is parallel to x – axis is y = 3 and it is perpendicular is x = 4.