Class:First Stage
Subject:Mathmatics
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TUTORIAL

Example1: find equation of line

1- (-5,10) and (-3,4)
2- (-4, -22) and (-6, -34)

Solution:

1- $m = \frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{(4-10)}{(-3+5)} = \frac{-6}{2} = -3$

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

(y-10)= -3(x+5)

y - 10 = -3x-15

y+3x=-15+10

y + 3x = -5

2- $m = \frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{(-34+22)}{(-6+4)} = \frac{-12}{-2} = 6$

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

(y+22)= 6(x+4)

y +22 = 6x+24

y-6x=24-22

y -6x = 2

Example 2: Find the equation of a straight line that passes through the points (1, 3) and (-2, 4).

Solution: To determine the equation of the line, we will use the formula point-slope form.

For this, we first need to find the slope of the line.

1- Slope= m = $\frac{(y_2 - y_1)}{(x_2 - x_1)} = \frac{(4-3)}{(-2-1)} = \frac{-1}{3}$

Therefore, the equation of the line passing through (1, 3) and (-2, 4) is

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

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

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

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

Example 3: Write the equation of the line with slope m=−3 and passing through the point (4,8). Write the final equation in slope-intercept form.

Solution:

Using point-slope form, substitute −3 for *m* and the point (4,8) for (x_1,y_1).

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

$y - 8 = -3(x - 4)$

$y - 8 = -3x + 12$

$y + 3x = 20$

example 4: Find a line parallel to the graph of $\frac{y}{3}$ =x+2 that passes through the point (3, 0).

Solution:

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

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

$$y = 3x + 6$$

The slope of the given line is 3. we can substitute $m = 3$, $x = 3$, and y = 0, The line parallel

$$m = m'$$
$$y-y'_1= m'\ (x-x'_1)$$
$$y- 0 = 3\ (x-3)$$
$$y - 3x = -9$$

The line parallel to y=3x+6y=3x+6 that passes through (3, 0) is y=3x−9y=3x−9.

We can prove this by representing them graphically

Line 1:

y = 3x + 6

at y=0 3x+6=0 3x=-6 x=-2 (-2 , 0)

at x=0 y=6 (0 , 6)

Line 2 :

y - 3x = -9

at y=0 -3x=-9 x= 3 (3 , 0)

at x=0 y= -9 (0,-9)