ANSWER TO QUESTION NO #83626 – MATH – ALGEBRA

QUESTION

What is the point-slope equation for $y = 2x + 3$

ANSWER

DEFINITION OF POINT-SLOPE FORM:

It is line geometry function mathematically defined by the formula $y - y1 = m(x - x1)$. It illustrates that the difference between the two points $(y - y1)$ of 'y' coordinate on a line is proportional to the difference between the two points $(x - x1)$ of 'x' coordinate on a line.

$$'m' is\ the\ slope\ of\ a\ line$$

$$(x1, y1)\ is\ any\ point\ on\ a\ line$$

FORMULA: The formula which is used to find the point-slope form of a line

$$(y - y1) = m(x - x1)$$

$$'m' is\ the\ slope\ of\ a\ line$$

$$(x1, y1)\ is\ any\ point\ on\ a\ line$$

SOLUTION

In this question the equation of the line is $y = 2x + 3$

$$'m' = 2, the\ slope\ of\ the\ line$$

So, for this question the equation can written in this form,

$$y = 2x + 4 - 1$$

$$y = 2(x + 2) - 1$$

$$y + 1 = 2(x + 2)$$

$$y— (-1) = 2(x + 2)$$

$$So, a\ point-slope\ form\ of\ this\ equation\ can\ be\ written\ as\ y-(-1)=2(x+2)$$

The point-slope form of this equation can be written in this way also-

$$y=2x+3$$

$$y=2\left(x+\frac{3}{2}\right)$$

$$y-0=2(x-\left(-\frac{3}{2}\right))$$

Thus, for different coordinates different point-slope form can be formed. Two point-slope forms which I am producing here are

$$y-(-1)=2(x-(-2))\ \text{(ANSWER)}$$

$$y-0=2(x-\left(-\tfrac{3}{2}\right))\qquad\text{(ANSWER)}$$

For the first point-slope form coordinate on the line is, (-2,-1)

2nd point-slope form coordinate on the line is, (-3/2,0)

Try to evaluate other point-slope form which can be formed for different coordinates on the line.

Another point-slope form which can be formed is

$$y=2x+3$$

$$y=2x+6-3$$

$$y-(-3)=2(x-(-3))\ \text{(ANSWER)}$$