4.4 Equation of a Line: Part II

Slope = m y-int: b

Example #1: Determine the equation of the line with the slope 2/3 that passes through the point A(-1, 3)

Step #1: Substitute the slope of 2/3 into the equation y = mx + b

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

Step #2: Substitute the point (-1, 3) in for x and y in the equation you formed in step 1.

$3 = \frac{2}{3}(-1) + b$

Now solve the equation for "b"

$3 = -\frac{2}{3} + b$ (×3)

$9 = -2 + 3b$ (×2)

$11 = 3b$

$b = \frac{11}{3}$

Step #3: Write the equation of the line in standard form with no fractions in the equation.

$y = mx + b$

$y = \frac{2}{3}x + \frac{11}{3}$

Standard form: $Ax + By = C$

$3y = 2x + 11$ (×3, $-3y$)

$C = Ax + By$

$0 = 2x - 3y + 11$ (-11)

$-11 = 2x - 3y$

Example #2: Determine the equation of the line passing through the points A(4, 6) and B(5, 8)

Step #1: Calculate the slope of the line using the two points

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8-6}{5-4} = \frac{2}{1} = 2$$

Step #2: Substitute the slope from step 1 into the equation y = mx + b

$$y = 2x + b$$

Step #3: Substitute point A(4, 6) in for x and y in the equation you formed in step 2.

x y

$$6 = 2(4) + b$$
$$6 = 8 + b$$

$b = -2$

Now solve the equation for "b"

Step #4: Write the equation of the line in standard form with no fractions in the equation.

$y = mx + b$

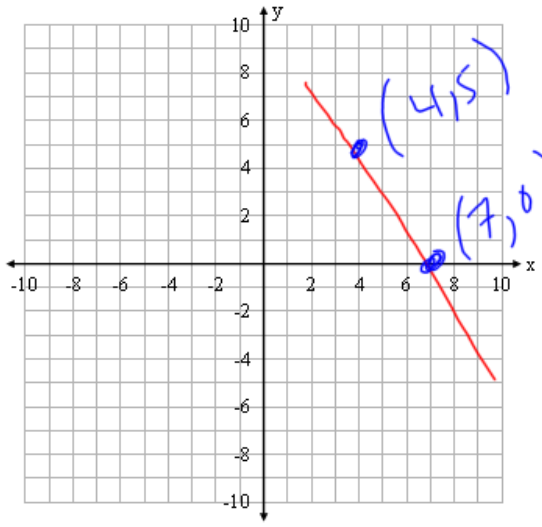
$y = 2x - 2$

$Ax + By = C$

$0 = 2x - y - 2$

$2 = 2x - y$

$2x - y = 2$



Pg. 226 1c

2 a odds

7 odds

9 a odds

11 a) i