

## 6.6 General Form of the Equation for a Linear Relation

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10:53 AM

$$y = mx + b \quad \text{slope-intercept form } \checkmark$$

$$y - y_1 = m(x - x_1) \quad \text{slope-point form } \checkmark$$

$$Ax + By + C = 0 \quad \text{General form}$$

$\uparrow$  whole #  
 $\swarrow \quad \searrow$  integers

Ex. #1 Write each equation in general form

$$(a) \quad y = \left(-\frac{1}{4}x + 3\right) \times 4$$

$$(b) \quad (y+2) \times 2 = \frac{3}{2}(x-4) \times 2$$

$$4y = -\frac{4}{4}x + 12$$

$$\frac{2y}{-2} + \frac{4}{+4} = 3(x-4)$$

$$4y = -1x + 12$$

+1x      +1x -12  
-12

$$0 = 3x - 12 - 2y - 4$$

$$0 = 3x - 2y - 16$$

$$1x + 4y - 12 = 0$$

Ex. #2 Determine the x- and y- intercepts of the line: slope?

$$x + 3y + 9 = 0$$

x-intercept

substitute  $y=0$   
solve for x

y-intercept

substitute  $x=0$   
solve for y

slope

re-write in slope-intercept form.

value for m

solve for x

$$x + 3(0) + 9 = 0$$

$$x + 0 + 9 = 0$$
$$\quad -9 \quad -9$$

$$x = -9$$

$(-9, 0)$

solve for y

$$0 + 3y + 9 = 0$$

$$\quad -9 \quad -9$$
$$\frac{3y}{3} = \frac{-9}{3}$$

$$y = -3$$

$(0, -3)$

form.

solve for y

$$\cancel{x} + 3y + 9 = 0$$
$$-x \quad -9 \quad -x \quad -9$$

$$\frac{3y}{3} = \frac{-x-9}{3}$$

$$y = -\frac{1}{3}x - \frac{9}{3}$$

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

↑

$$\text{slope} = -\frac{1}{3}$$

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