

Algebra 1

Chapter 5

Section 5-5

May 13-10:02 PM

Review

$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

(x_1, y_1)
 (x_2, y_2)

Direct Variation: $y = kx$ $k = \frac{y}{x}$ $k \rightarrow \text{slope}$
 $(0,0)$

Slope-intercept form: $y = mx + b \rightarrow y\text{-int}$
 $y\text{-int} \rightarrow (0, b)$ $m \rightarrow \text{slope}$

Point-slope form: $y - y_1 = m(x - x_1)$
 (x_1, y_1)

Nov 4-1:12 PM

You and your seven younger siblings go to the movies one afternoon with \$40 to spend on concessions. Each beverage (b) is \$2.50 and each tub of popcorn (t) is \$5. Assume you spend all of the \$40. Write an equation describing this relationship.

$$2.50b + 5t = 40$$

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You and your seven younger siblings go to the movies one afternoon with \$40 to spend on concessions. Each beverage (b) is \$2.50 and each tub of popcorn (t) is \$5. Assume you spend all of the \$40. If each of you buy a beverage, how many tubs of popcorn could you buy?

$$2.50b + 5t = 40$$

$$2.50 \cdot 8 + 5t = 40$$

$$20.00 + 5t = 40$$

$$\begin{array}{r} -20 \\ 5t = 20 \end{array}$$

$$\frac{5t}{5} = \frac{20}{5}$$

$$t = 4$$

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Standard form

A linear equation in standard form puts the variables on the same side of the equation. The constant is isolated.

$$\underline{A}x + \underline{B}y = \underline{C}$$

A and B are coefficients. They are not *both* zero.

x and y are the independent and dependent variables. (They can change). Each x goes with a certain y in an ordered pair: (x,y)

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Rewrite each equation in standard form using integers

$$y = \cancel{12x} - 7$$

~~-12x~~ ~~-12x~~

$$-12x + y = -7$$

$$y - 14 = -2(x + 6)$$

$$y - 14 = -2x - 12$$

+2x +2x

$$2x + y - 14 = -12$$

+14 +14

$$2x + y = 2$$

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Rewrite each equation in standard form using integers

$$y = \frac{-8}{11}x + 3$$

$$11 \cdot y = 11 \cdot \frac{-8}{11}x + 3 \cdot 11$$

$$11y = -8x + 33$$

$$8x + 11y = 33$$

$$y + 4 = \frac{3}{5}(x + 8)$$

$$5y + 5 \cdot 4 = 5 \cdot \frac{3}{5}(x + 8)$$

$$5y + 20 = 3(x + 8)$$

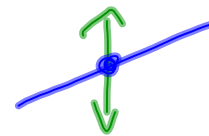
$$5y + 20 = 3x + 24$$

$$-3x + 5y + 20 = 24$$

$$-3x + 5y = 4$$

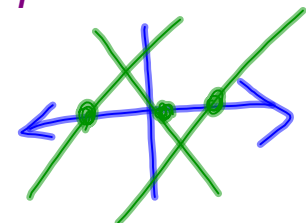
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X-intercept



The y-intercept is where the graph of a line crosses the y-axis. ($x=0$)

Similarly, the x-intercept is where the graph of a line crosses the x-axis. ($y=0$)



Nov 21-8:31 AM

Find the two intercepts of each function

$$6x - 3y = 12$$

$$x\text{-int} \rightarrow y=0$$

$$6x = 12$$

$$x = 2$$

$$y\text{-int} \rightarrow x=0$$

$$-3y = 12$$

$$y = -4$$

$$x - y = 43$$

$$x\text{-int } y=0$$

$$x = 43$$

$$y\text{-int} \rightarrow x=0$$

$$-y = 43$$

$$y = -43$$

$$5x + 2y = -20$$

$$x=0$$

$$2y = -20$$

$$y = -10$$

$$y=0$$

$$5x = -20$$

$$x = -4$$

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Find the two intercepts of each function

$$2x - 13y = 1$$

$$x\text{-int} \rightarrow y=0$$

$$2x = 1$$

$$x = \frac{1}{2}$$

$$x=0$$

$$-13y = 1$$

$$y = -\frac{1}{13}$$

$$-9x - 17y = 0$$

$$x=0$$

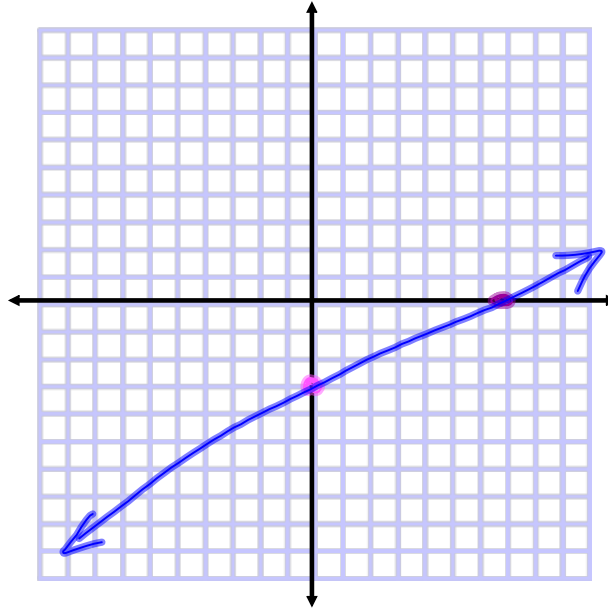
$$-17y = 0$$

$$y=0$$

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Graph the line using intercepts: $3x - 7y = 21$

$$y=0$$
$$3x=21$$
$$x=7$$

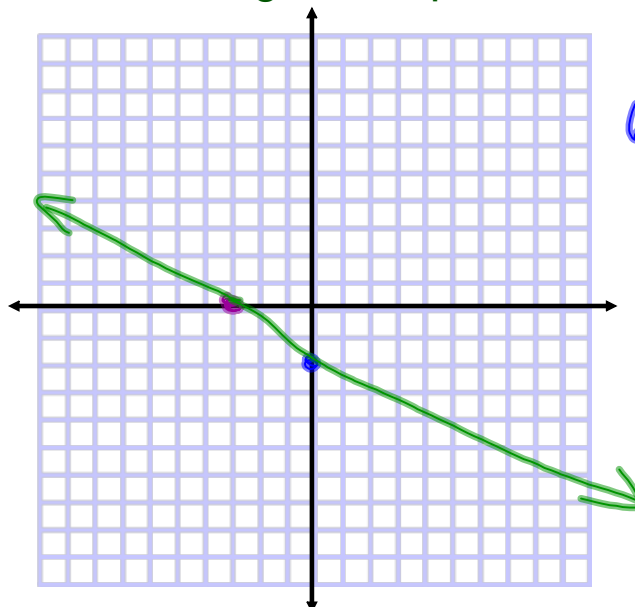


$$x=0$$
$$-7y=21$$
$$y=-3$$

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Graph the line using intercepts: $4x + 6y = -12$

$$y=0$$
$$\frac{4x}{4} = \frac{-12}{4}$$
$$x=-3$$



$$x=0$$
$$6y=-12$$
$$y=-2$$

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Horizontal and Vertical

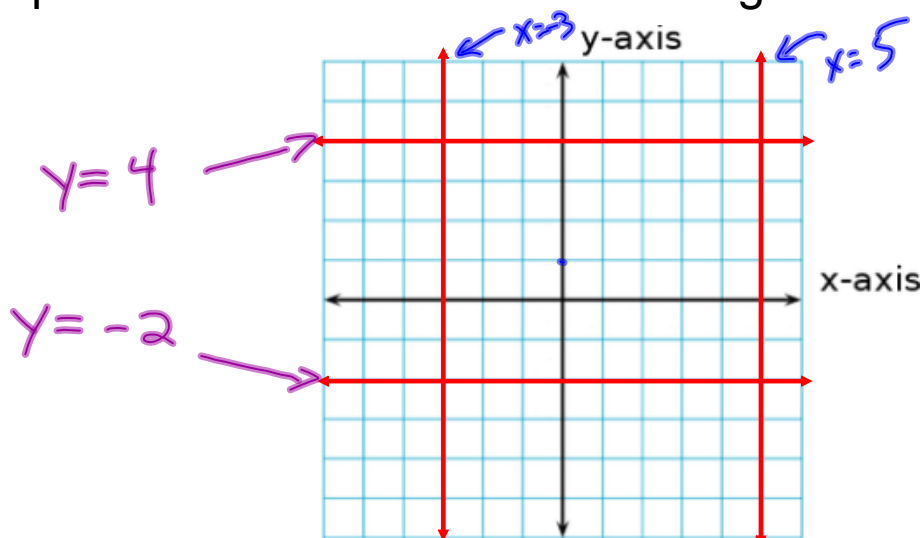
Each point on a horizontal line has the same vertical position (height). The equation is in the form $y = n$, where n is some real number.

Each point on a vertical line has the same horizontal position. The equation is in the form $x = n$, where n is some real number.

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Horizontal and Vertical

Write the equation of each red line in the diagram.



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