

Lesson 7: Section 2.3 & 2.4 - Slope Intercept Form

Objectives:

- ~ Use Slope Intercept Form to find the slope and y-int of an equation
- ~ Write Equations in Slope Intercept Form
- ~ Write Equations using Point Slope Form

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Slope = m

$$m = \frac{\text{Rise}}{\text{Run}}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

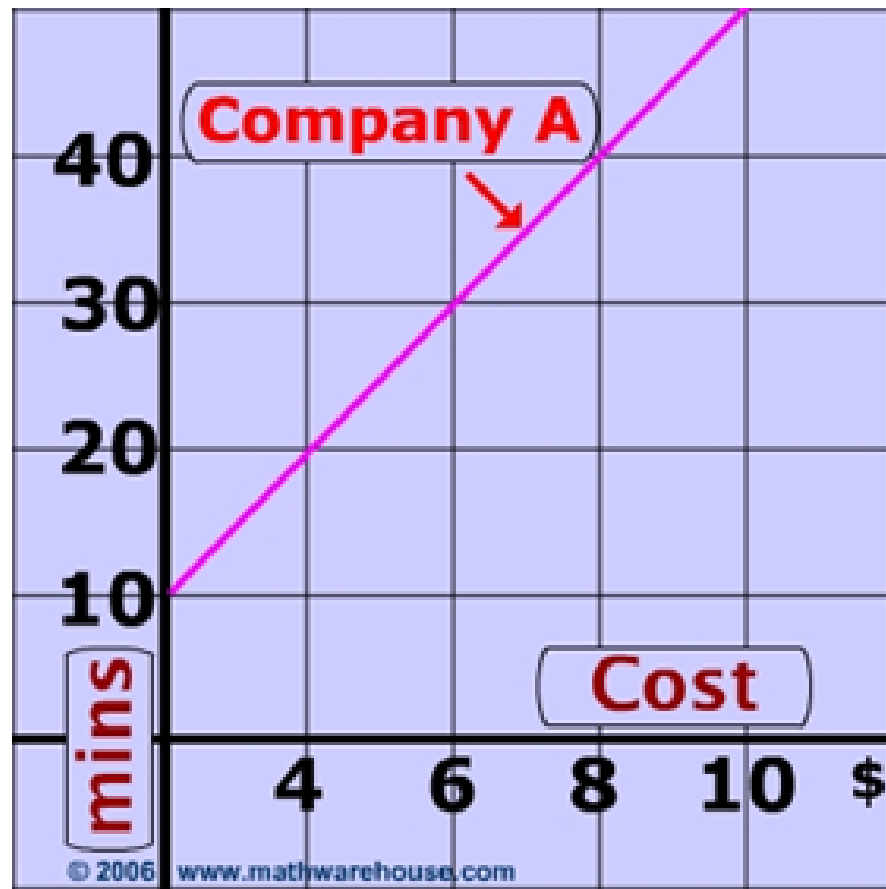
Slope-Intercept Form

$$y = mx + b$$

Where m = slope and b = y-intercept

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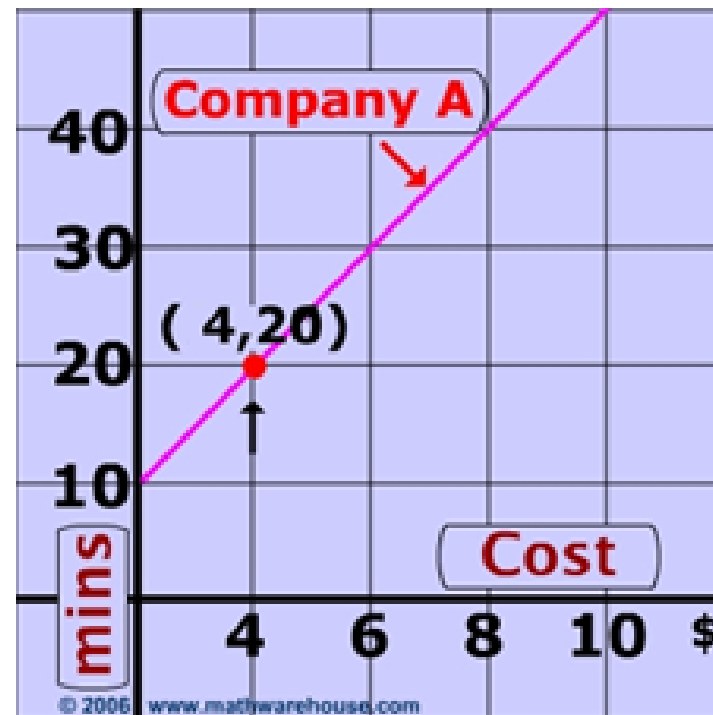
Cell Phone Company A's calling plan is represented by the line on the graph below. How much does Company Charge for 20 minutes of usage?



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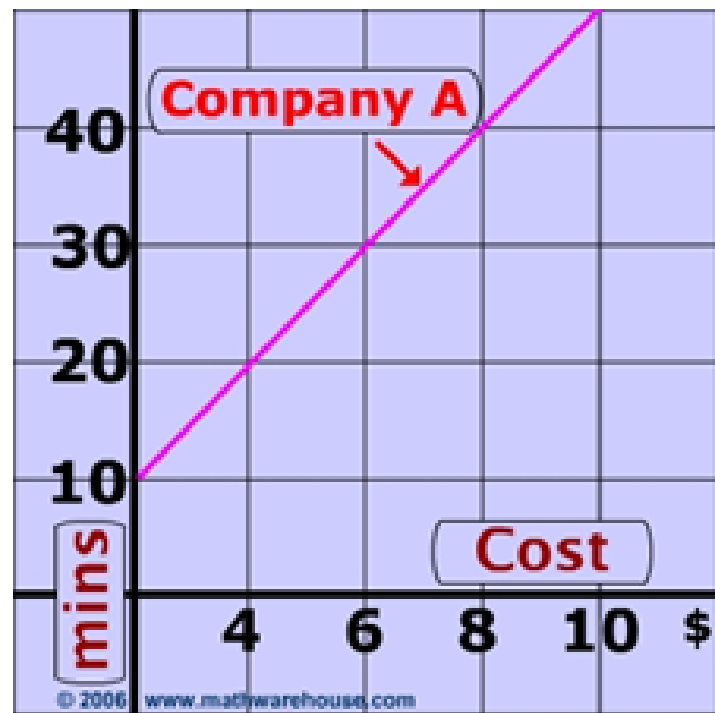
Cell Phone Company A's calling plan is represented by the line on the graph below. How much does Company Charge for 20 minutes of usage?

Answer: \$4



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Use the graph to write Cell Phone A's calling plan cost in a linear equation using Slope-Intercept Form.



What is m ?

What is b (the y -int)?

$y =$

Slope-Intercept Form

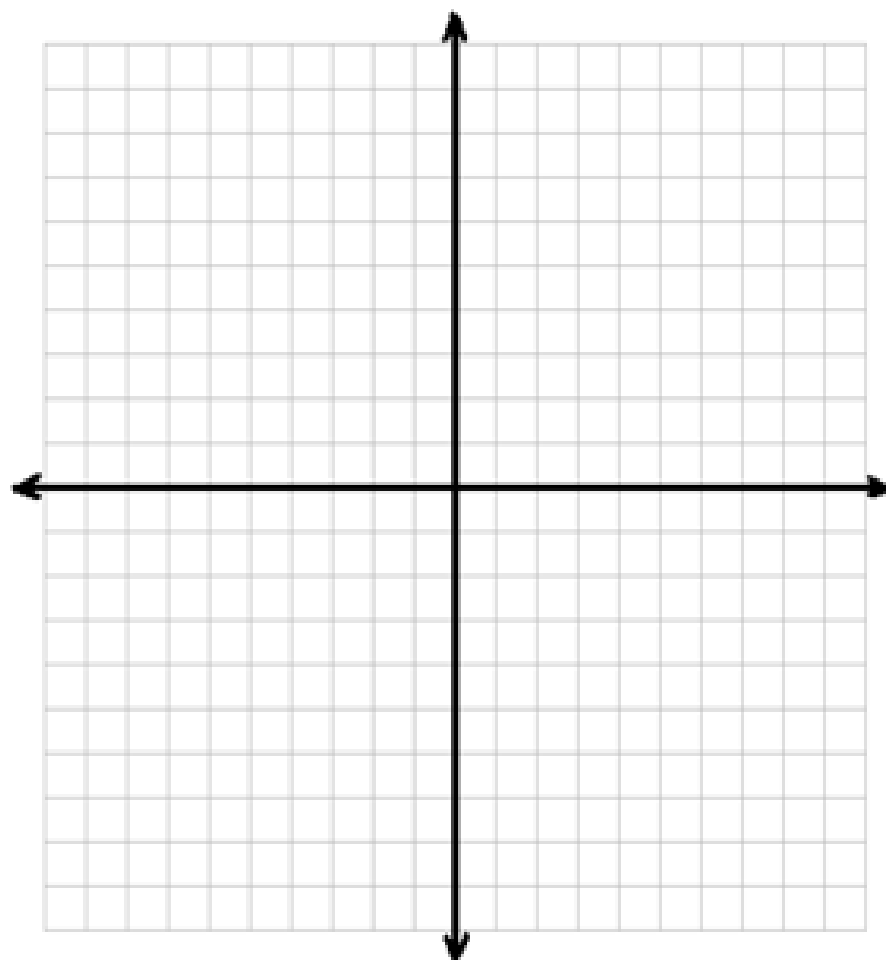
$$y = mx + b$$

Where m = slope and b = y -intercept

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Ex 1:

Write an equation in Slope-Intercept Form of the line that has slope $(-1/2)$ and passes through the y -axis at -6 .



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Ex 2:

Write an equation in Slope-Intercept Form of the line that has slope $(-2/3)$ and passes through the point $(-6, 1)$.

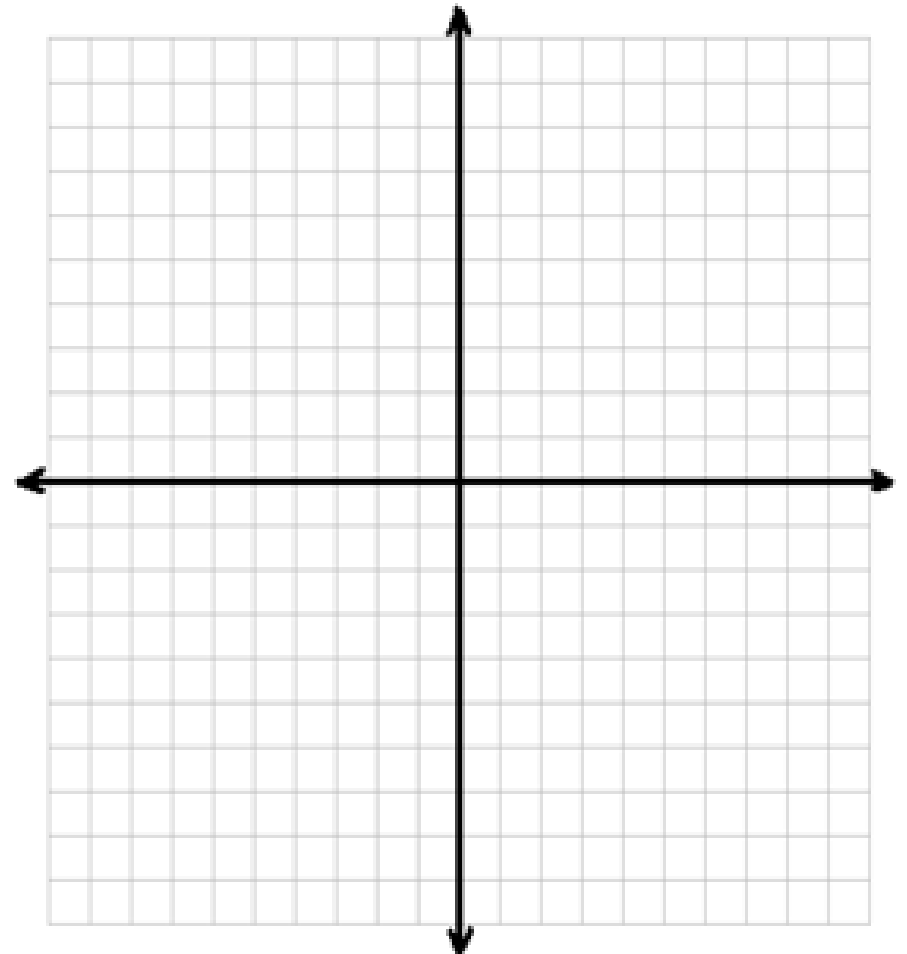
Hint: We know the slope and the x and y values of one point on the graph. Substitute for m, x, and y in the slope-intercept form and find b.

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Ex 3:

Write an equation of the line that passes through (3,2) and (5,3).

m=



If we are given the coordinates of two points on a line, we can use this form to write an equation.

Point-Slope Form

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

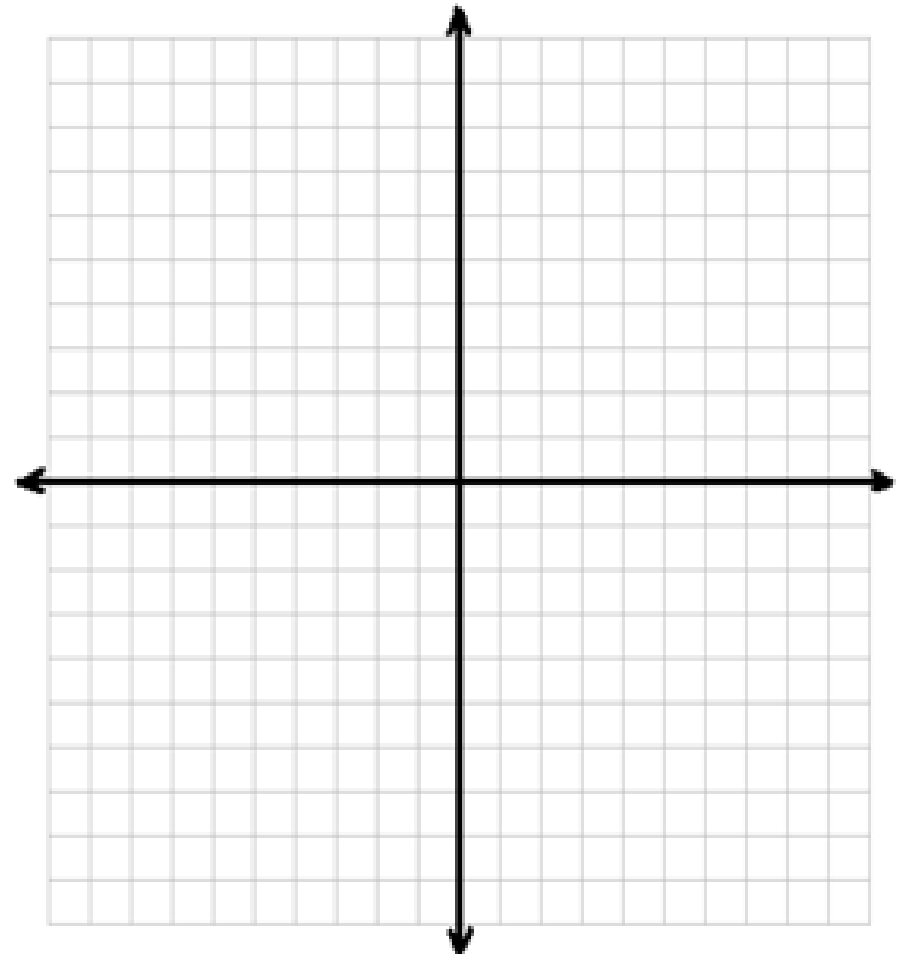
Where m = slope (we get the slope from two points) and (x_1, y_1) .

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Ex 4:

Write an equation of the line that passes through $(-2,5)$ and $(3,1)$.

$m =$



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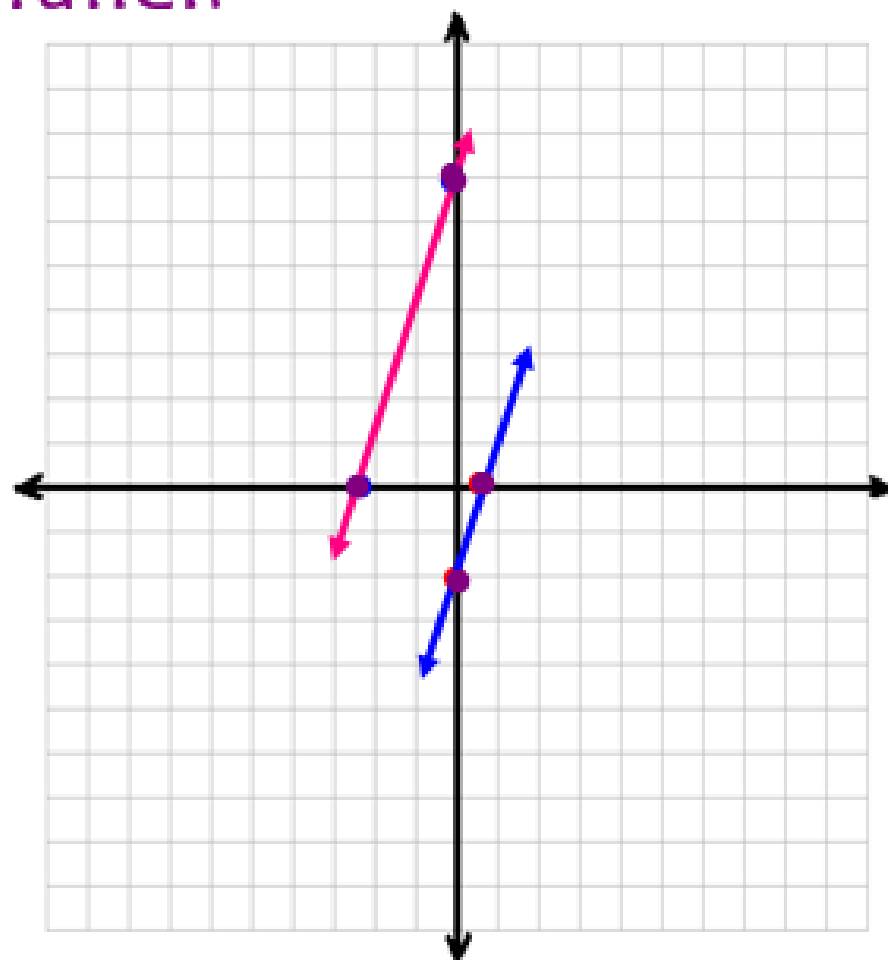
Parallel lines:

In a plane, non-vertical lines with the same slope are parallel.

EXAMPLE:

$$y = 3x + 7$$

$$y = 3x - 2$$



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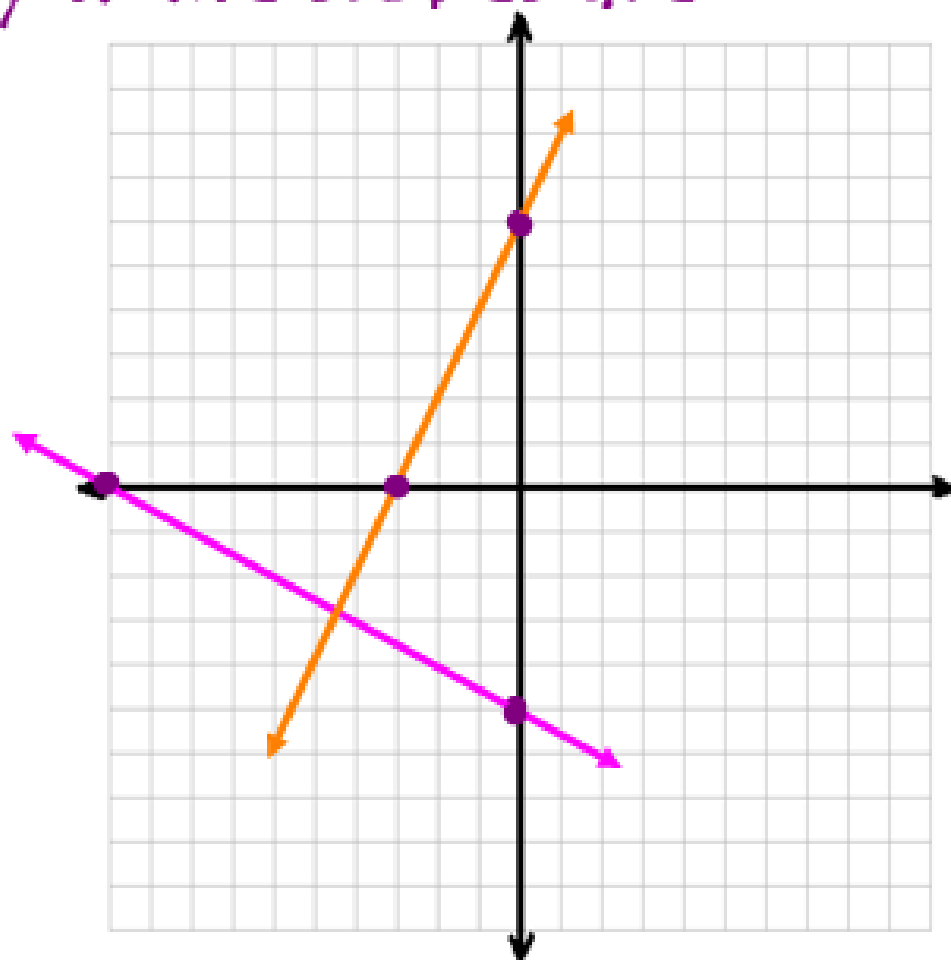
Perpendicular lines:

Two lines (NOT horizontal or vertical) are perpendicular if and only if the slopes are negative reciprocals of each other.

EXAMPLE:

$$y = 2x + 6$$

$$y = (-1/2)x - 5$$

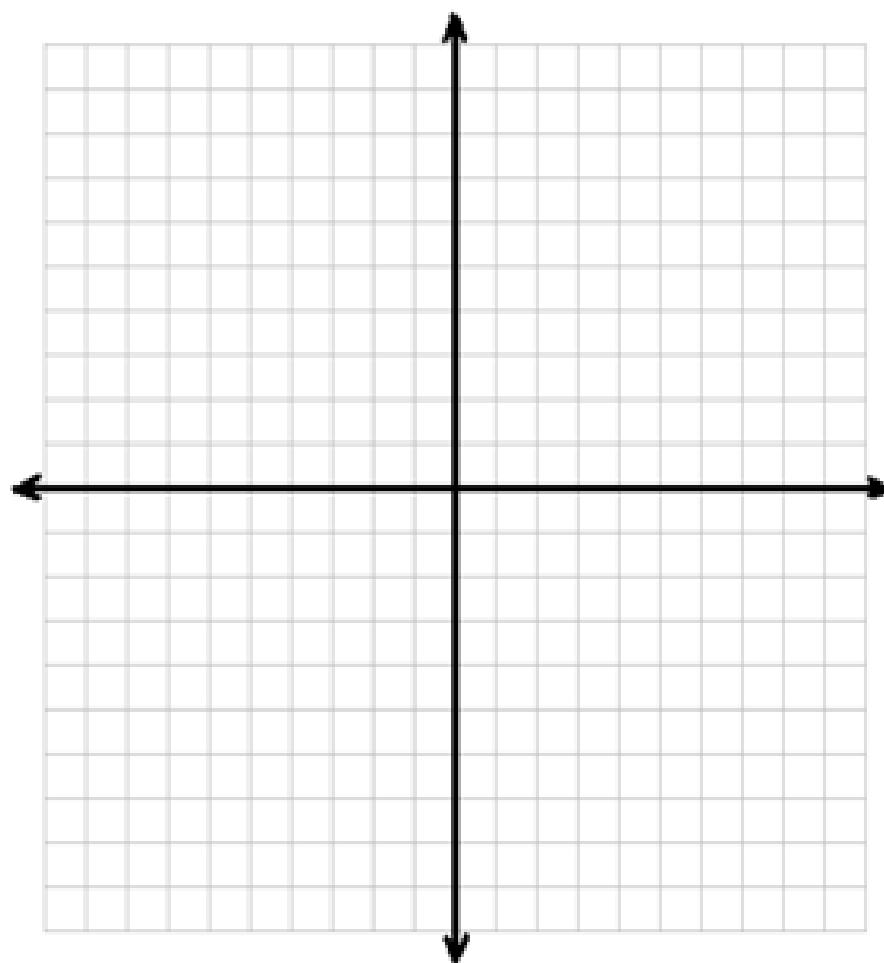


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Ex 5:

Write an equation of the line that passes through $(-9,5)$ and is perpendicular to the line whose equation is $y = -3x + 2$.

$m =$

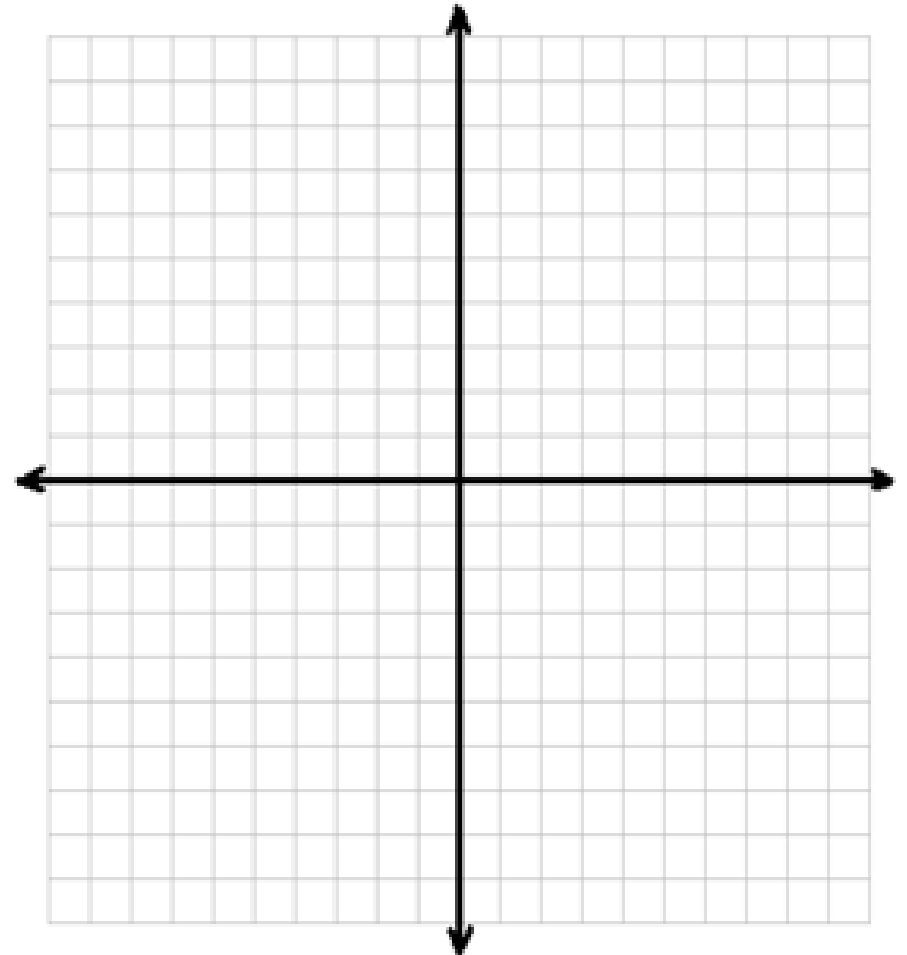


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Ex 6:

Write an equation of the line that passes through x-int of $\frac{1}{2}$ and y-int of -3 .

$m =$

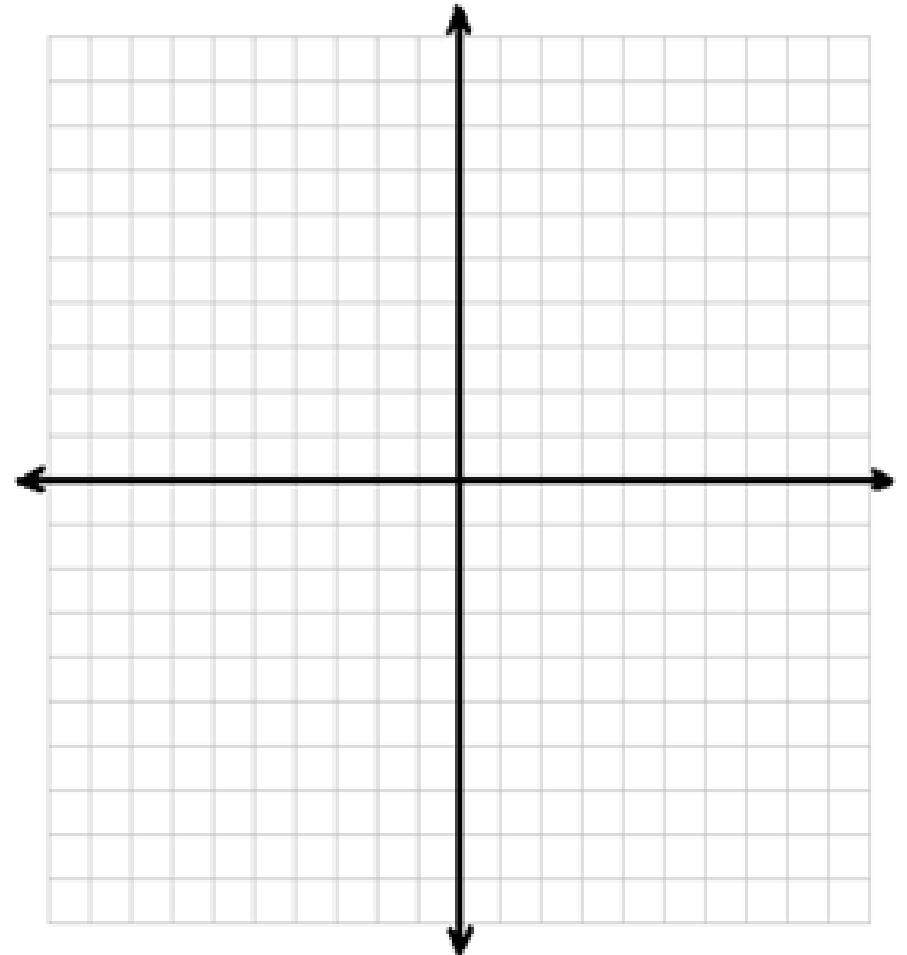


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Ex 7:

Write an equation of the line that is parallel to
 $x + 2y = -10$ and goes through $(-2, -6)$.

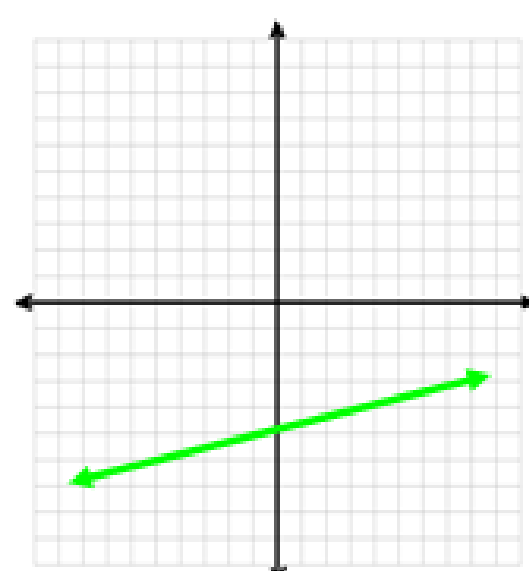
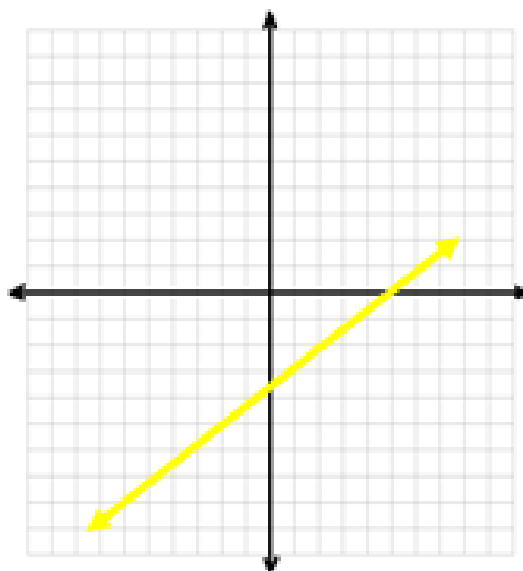
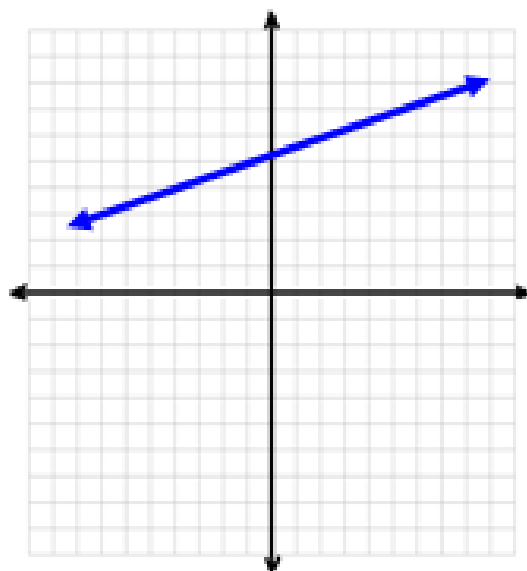
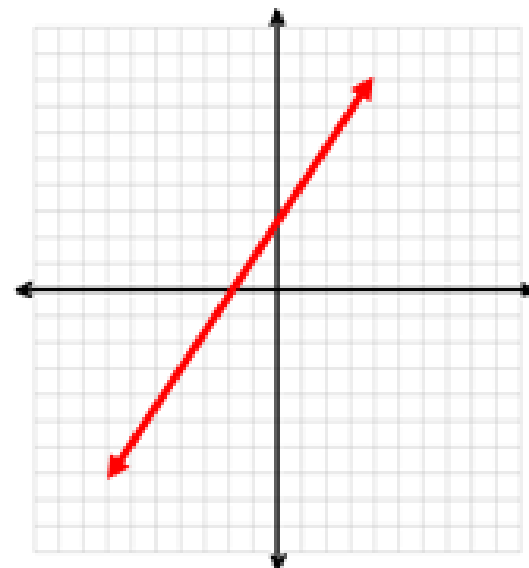
$m =$



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Positive Slope Graphs
(Increasing or Rising)

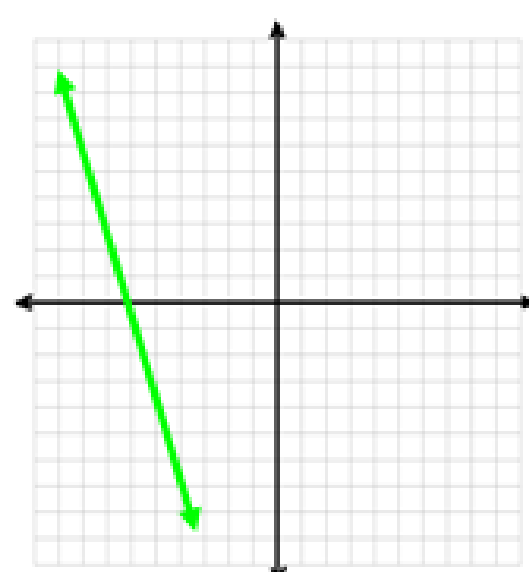
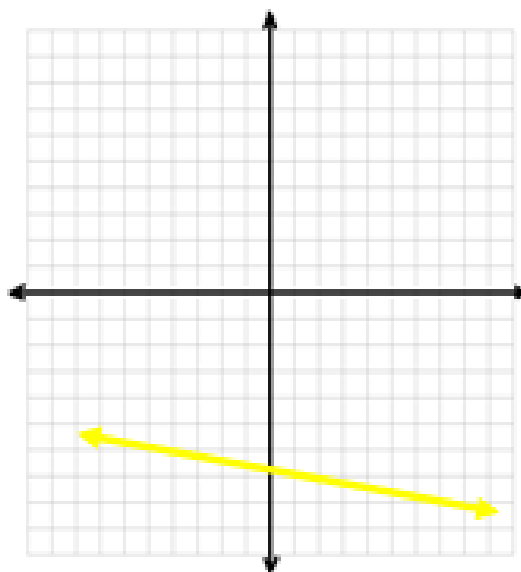
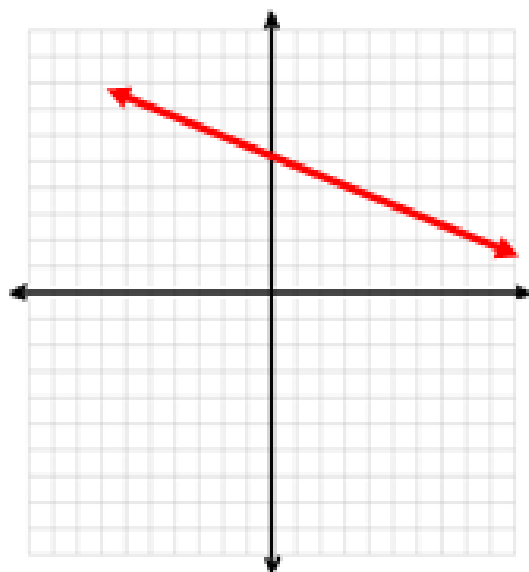
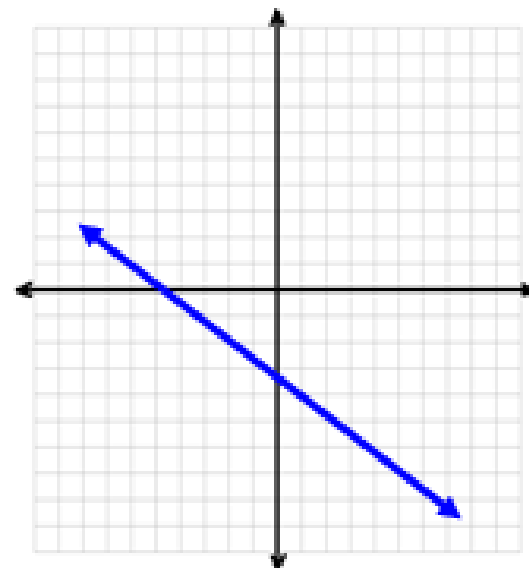
$$m > 0$$



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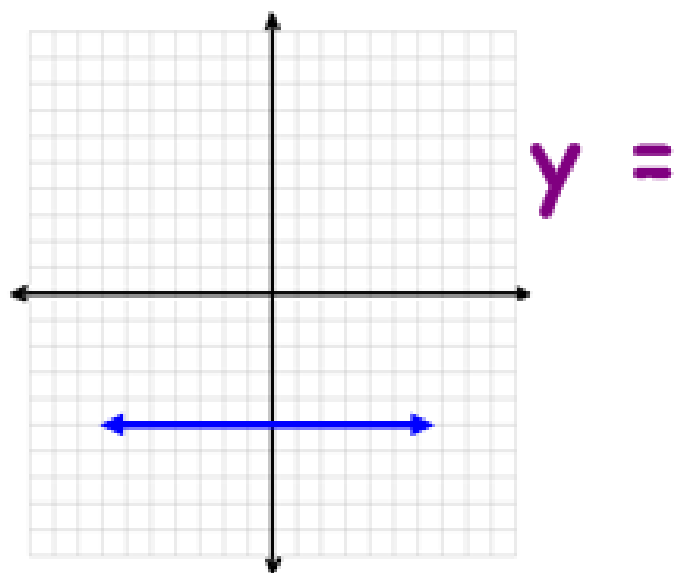
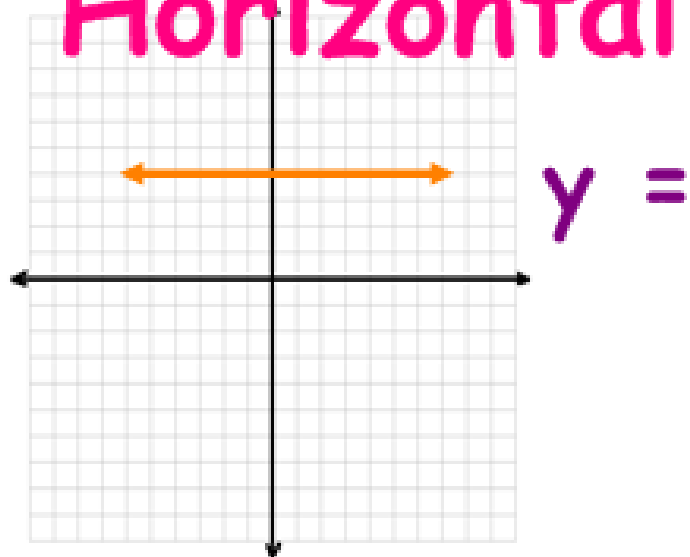
Negative Slope Graphs
(Decreasing or Falling)

$m < 0$



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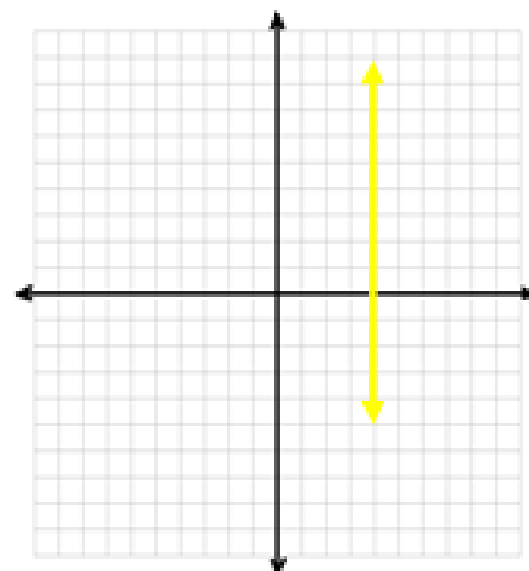
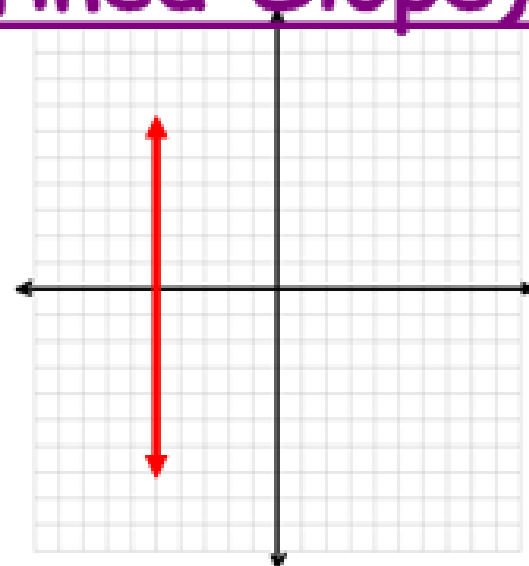
Slope=0 Graphs
Horizontal



No Slope Graphs
(Undefined Slope)

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$x =$
 $x =$



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Can you?

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Homework:

Assignment 7