4.4

Graphing and Writing Linear Equations

Learning Target:

- **I can find slopes and *y*-intercepts of graphs of linear equations.**
- **I can graph linear equations written in slope-intercept form.**

DO NOW

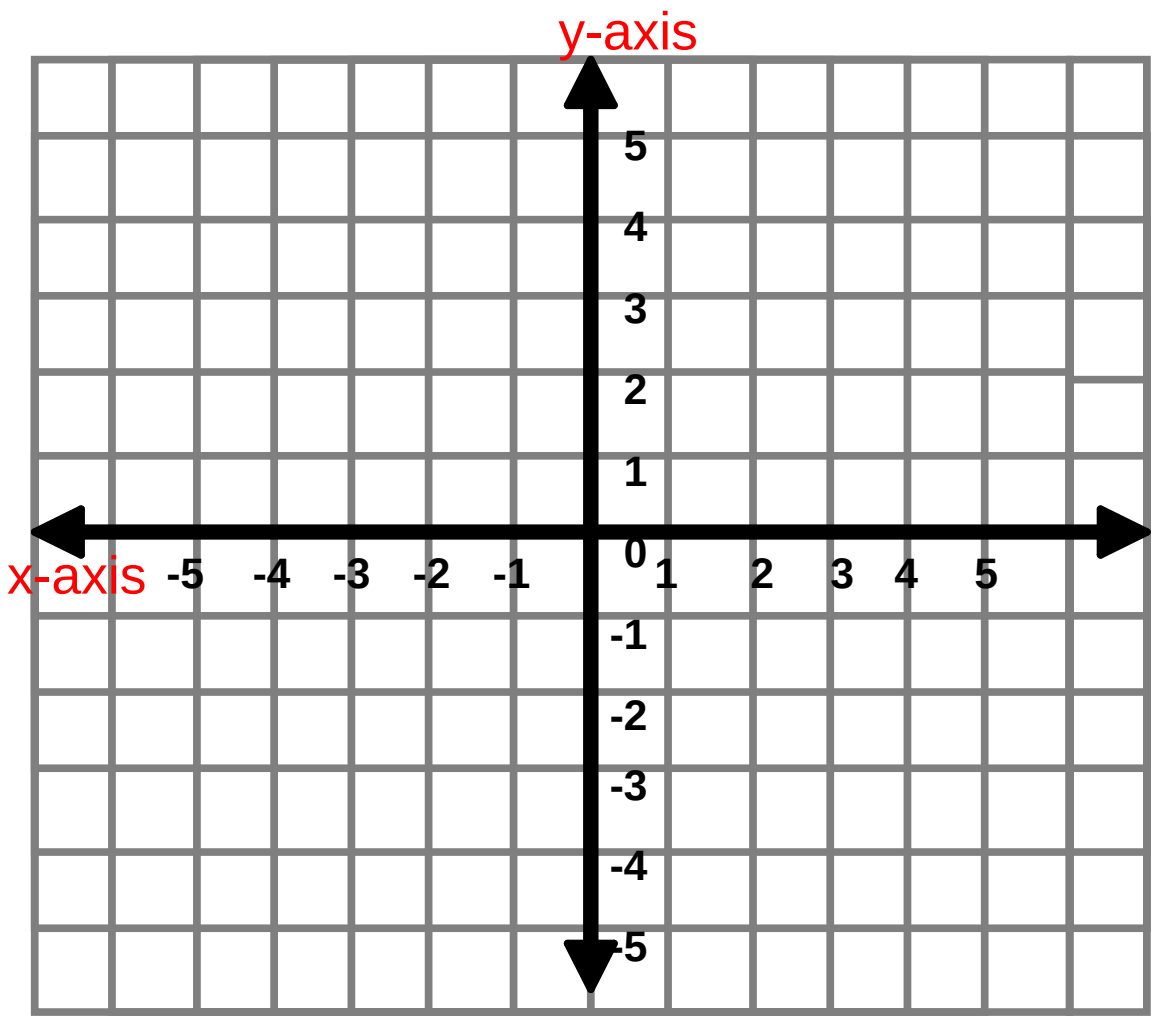
1. **Find the slope of the line that passes through the points $(3, 1)$ and $(4, -5)$.**

2. **Find the slope of the line that passes through the points $(1, 5)$ and $(1, 6)$.**

Graphing Linear Equations

Graph the following using 3 points.

1) $y = 2x - 3$



a) Pick any two points and find the slope.

m = _____

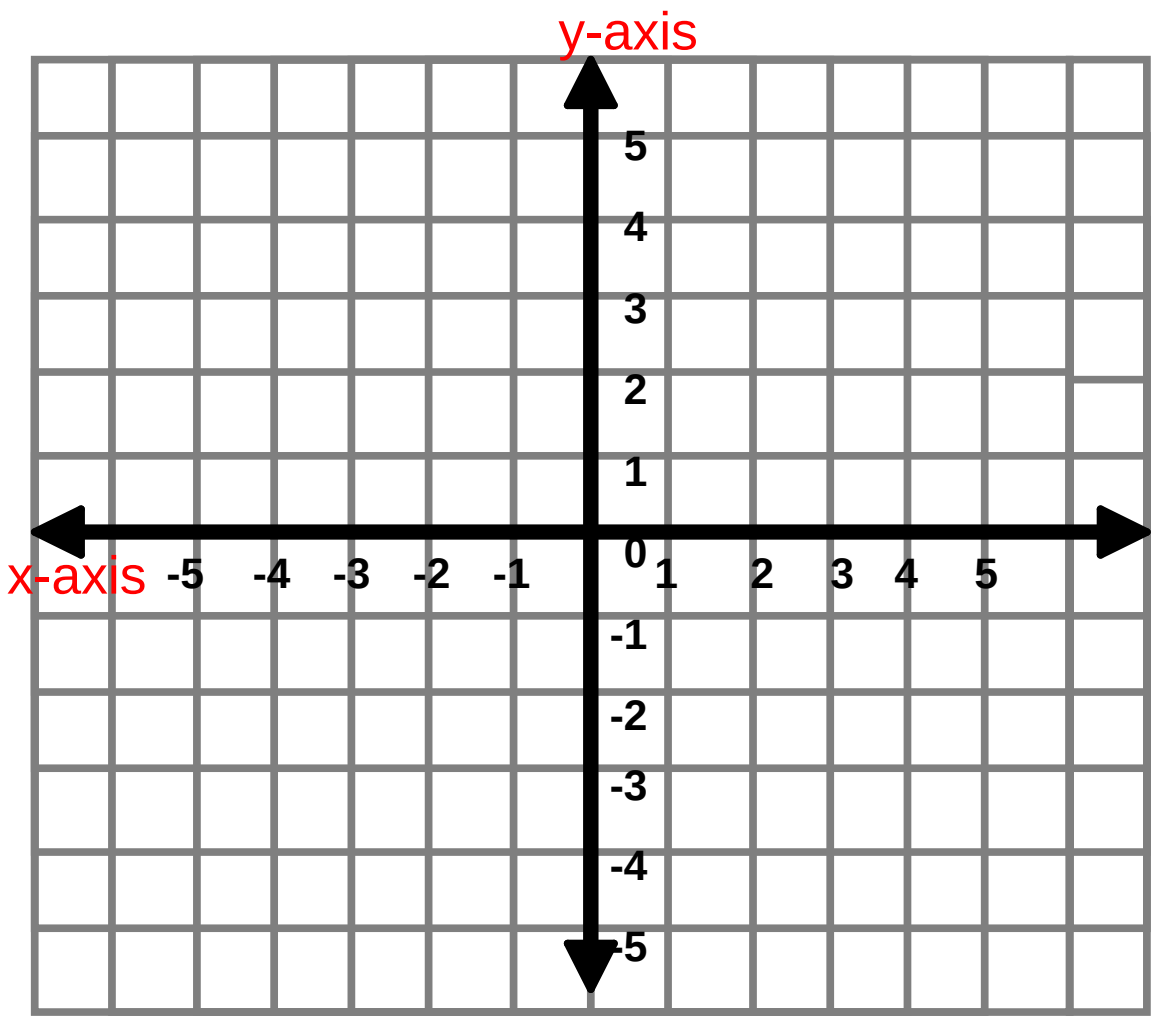
b) Where does the graph intersect the y-axis.

y-intercept = _____

Graphing Linear Equations

Graph the following using 3 points.

2) $y = -3x + 1$



a) Pick any two points and find the slope.

m = _____

b) Where does the graph intersect the y-axis.

y-intercept = _____

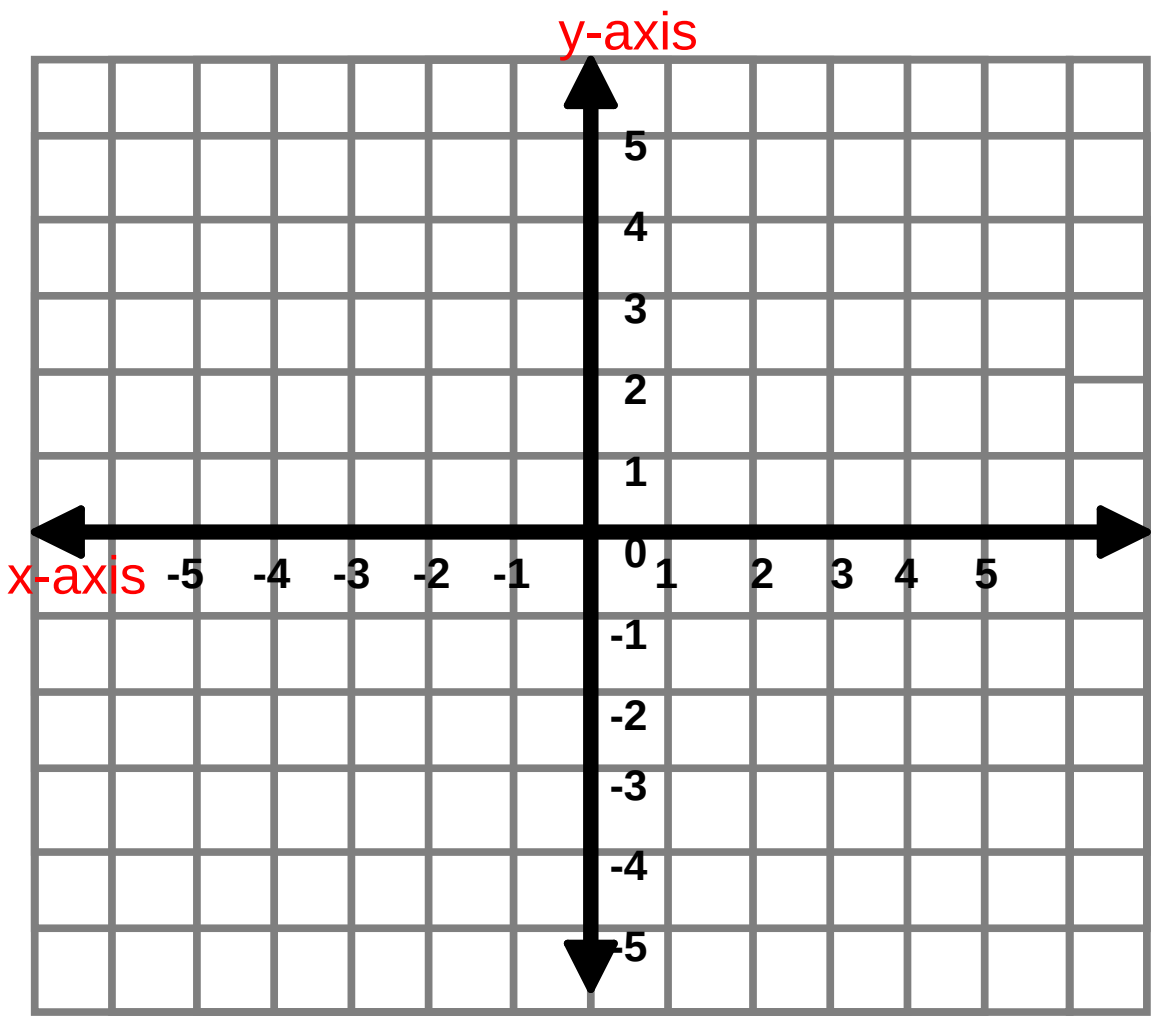
Slope-Intercept Form of a Linear Equation

$$y = mx + b$$

Graphing Linear Equations

Graph the following equation using slope-intercept form.

1) $y = 2x - 3$



Graphing Linear Equations

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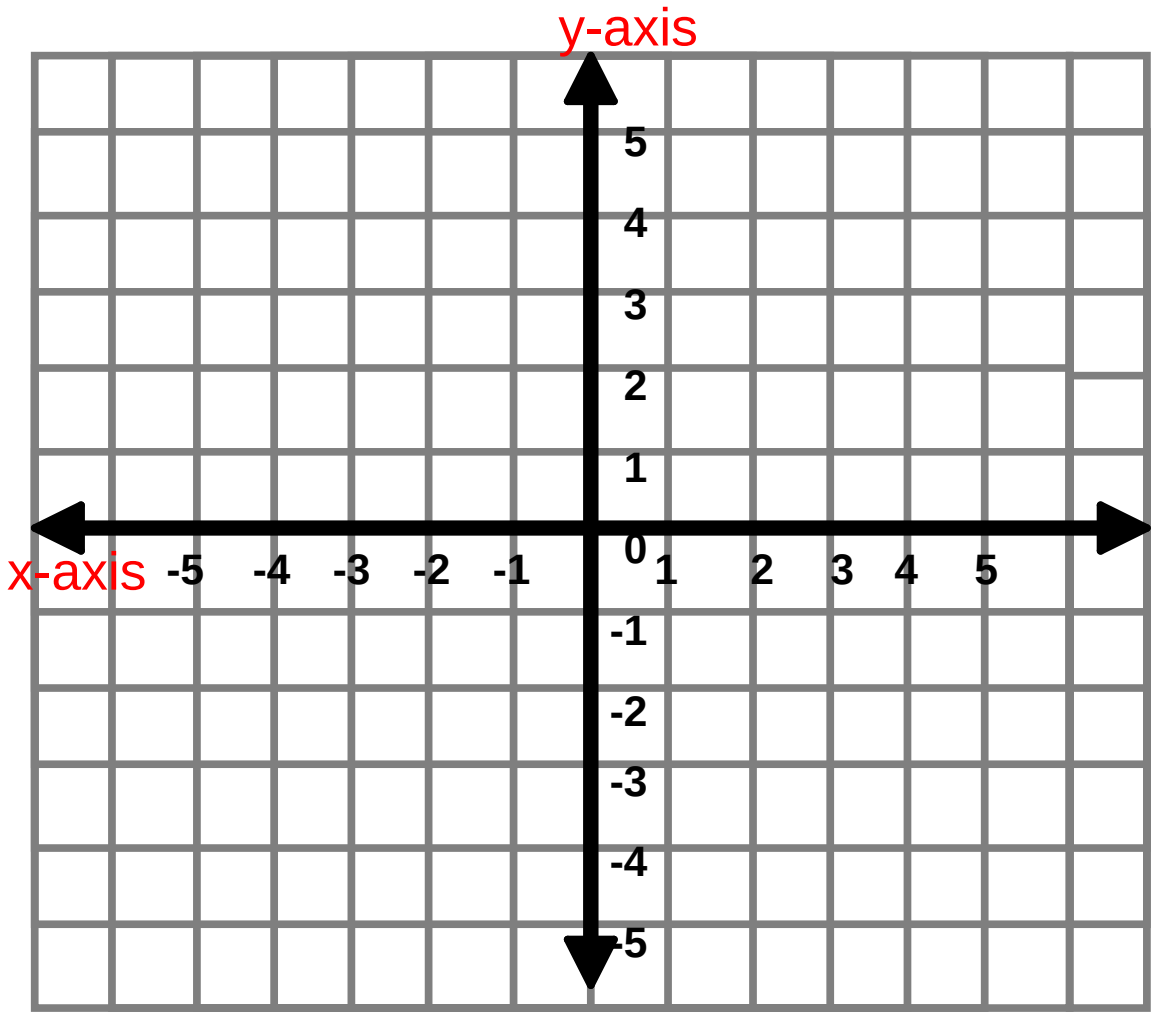
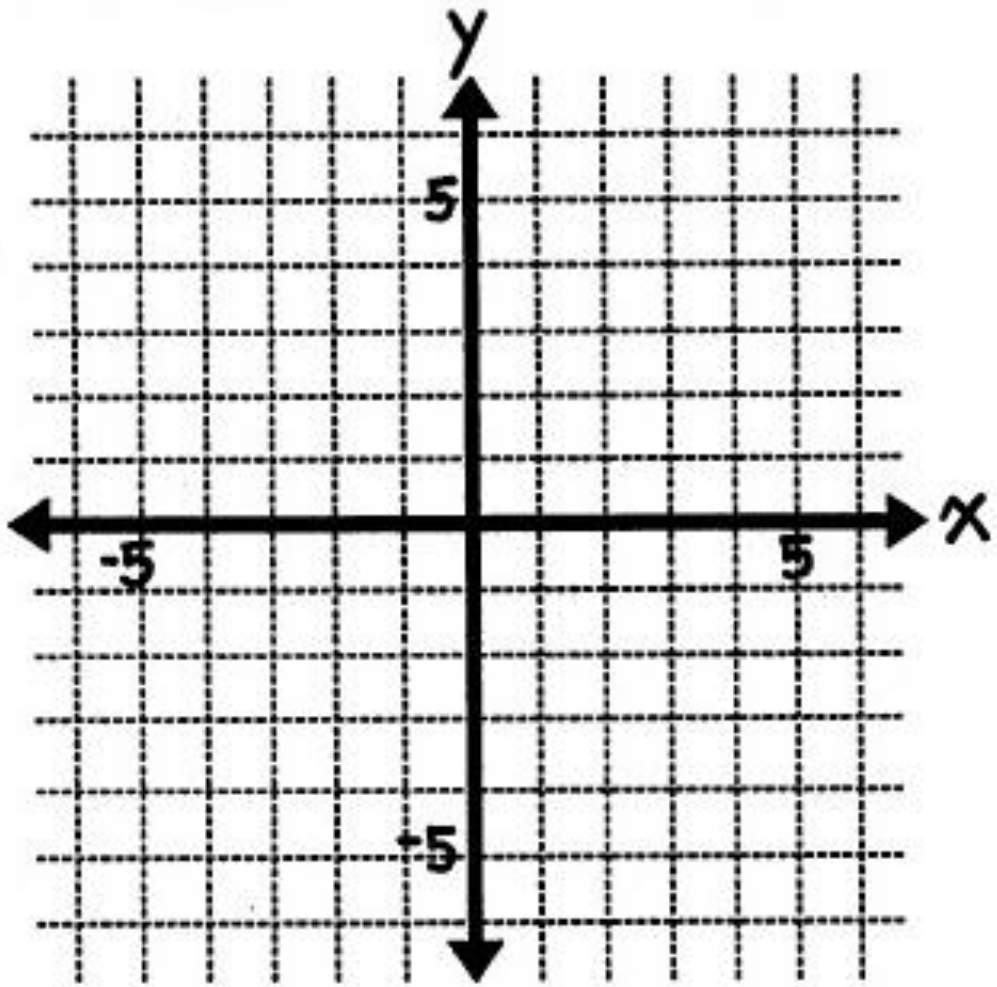


Write the slope and y-intercept. Then plot them. Finish by graphing the line.

3) $y = 2x - 5$

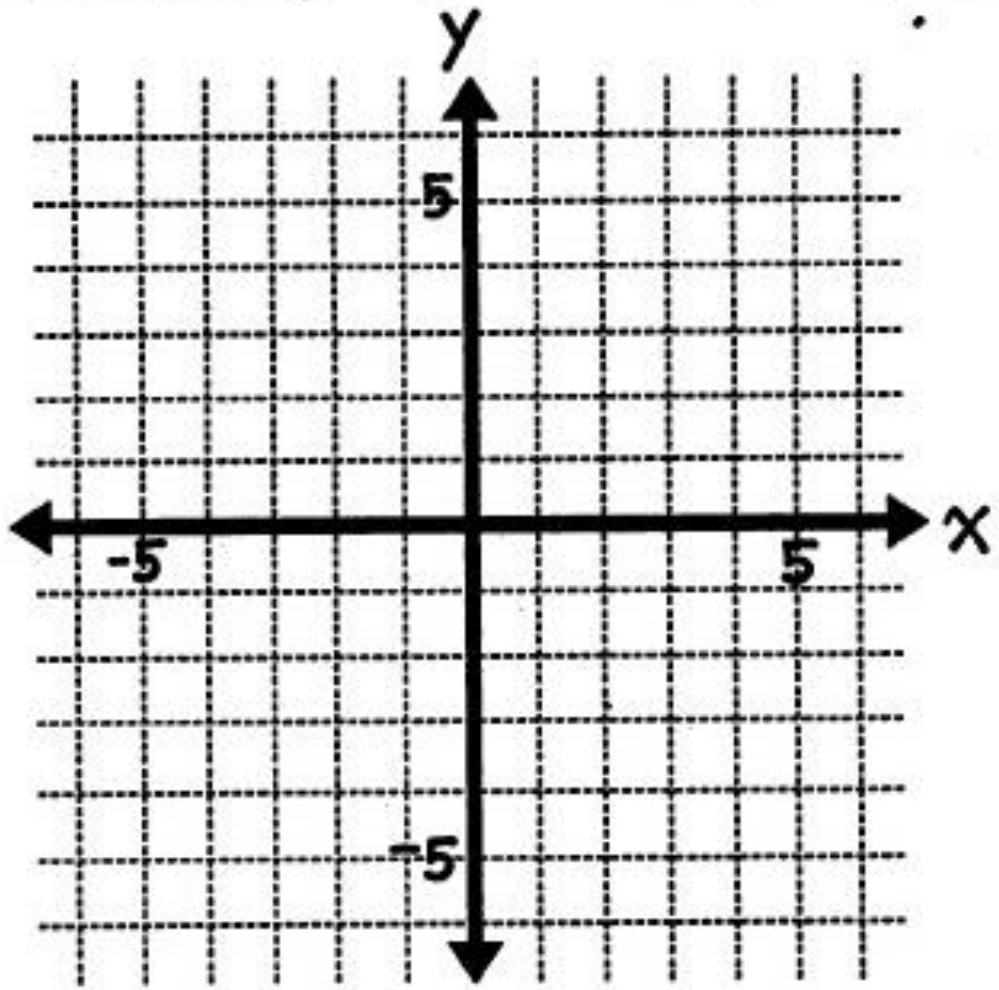
slope: _____ y-intercept: _____



Write the slope and y-intercept. Then plot them. Finish by graphing the line.

4) $y = \frac{1}{3}x + 2$

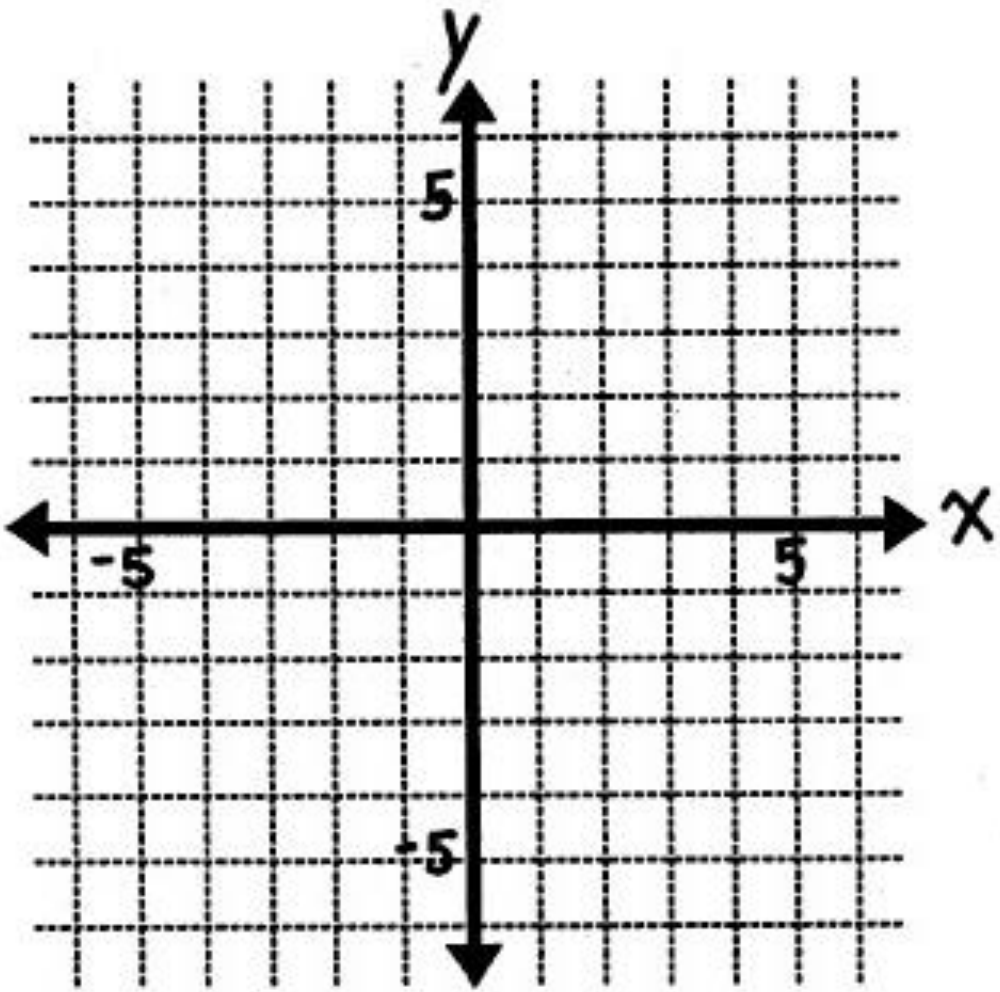
slope: _____ y-intercept: _____



Write the slope and y-intercept. Then plot them. Finish by graphing the line.

5) $y = \frac{-2}{5}x + 1$

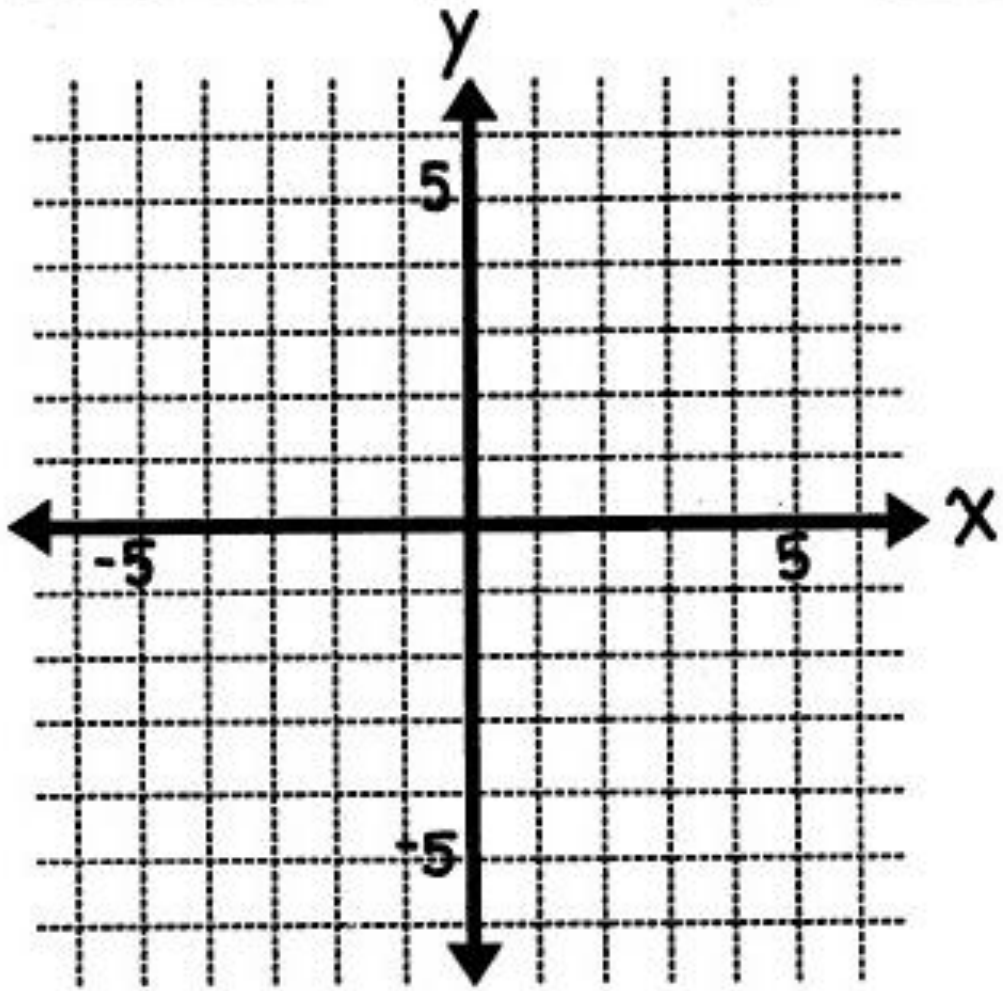
slope: _____ y-intercept: _____



Write the slope and y-intercept. Then plot them. Finish by graphing the line.

6) $y = \frac{3}{4}x$

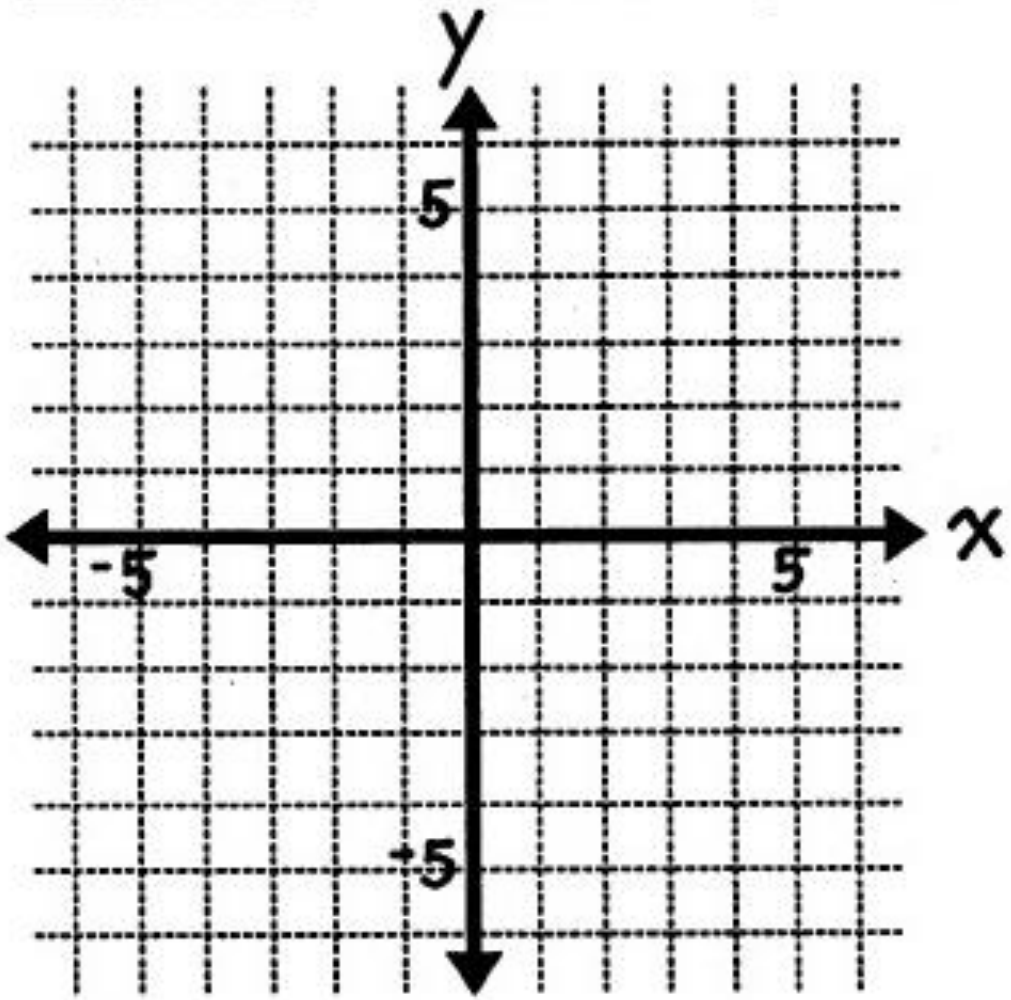
slope: _____ y-intercept: _____



Write the slope and y-intercept. Then plot them. Finish by graphing the line.

7) $y = x - 3$

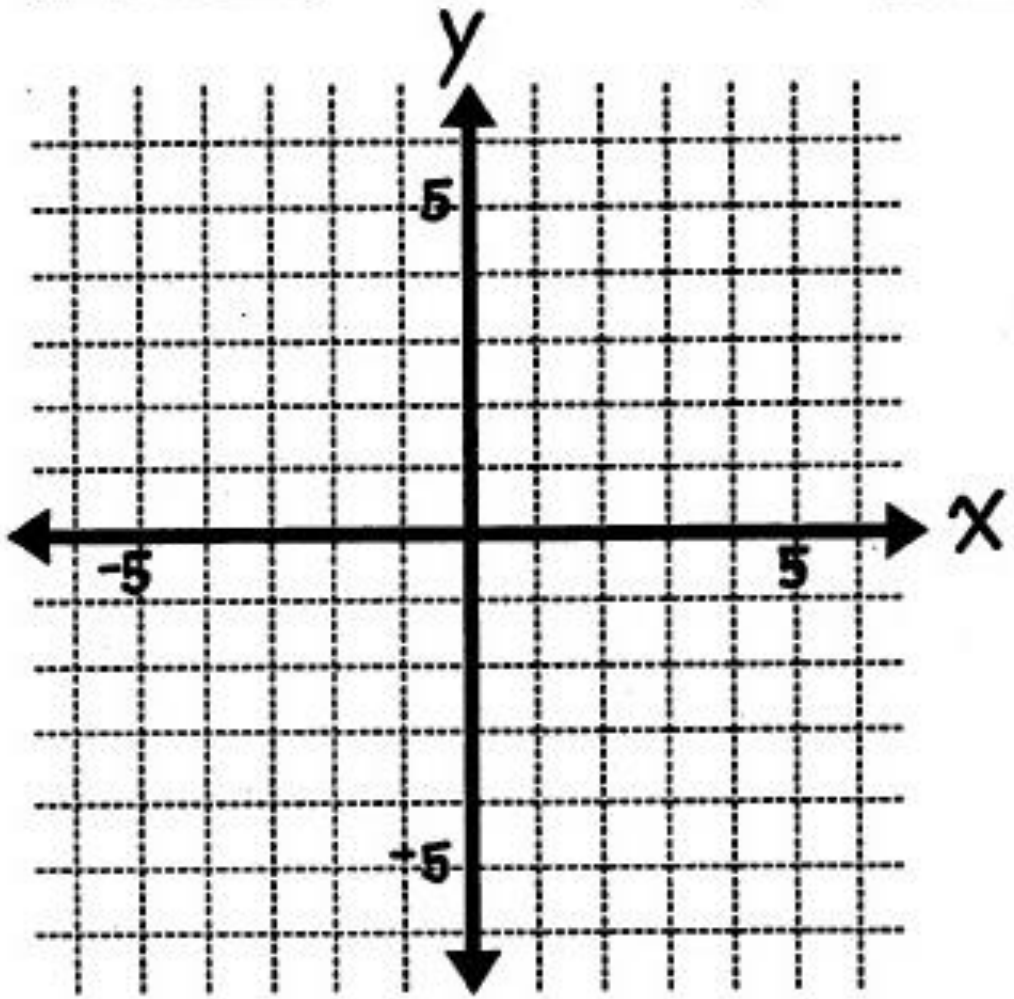
slope: _____ y-intercept: _____



Write the slope and y-intercept. Then plot them. Finish by graphing the line.

8) $y = -x + 4$

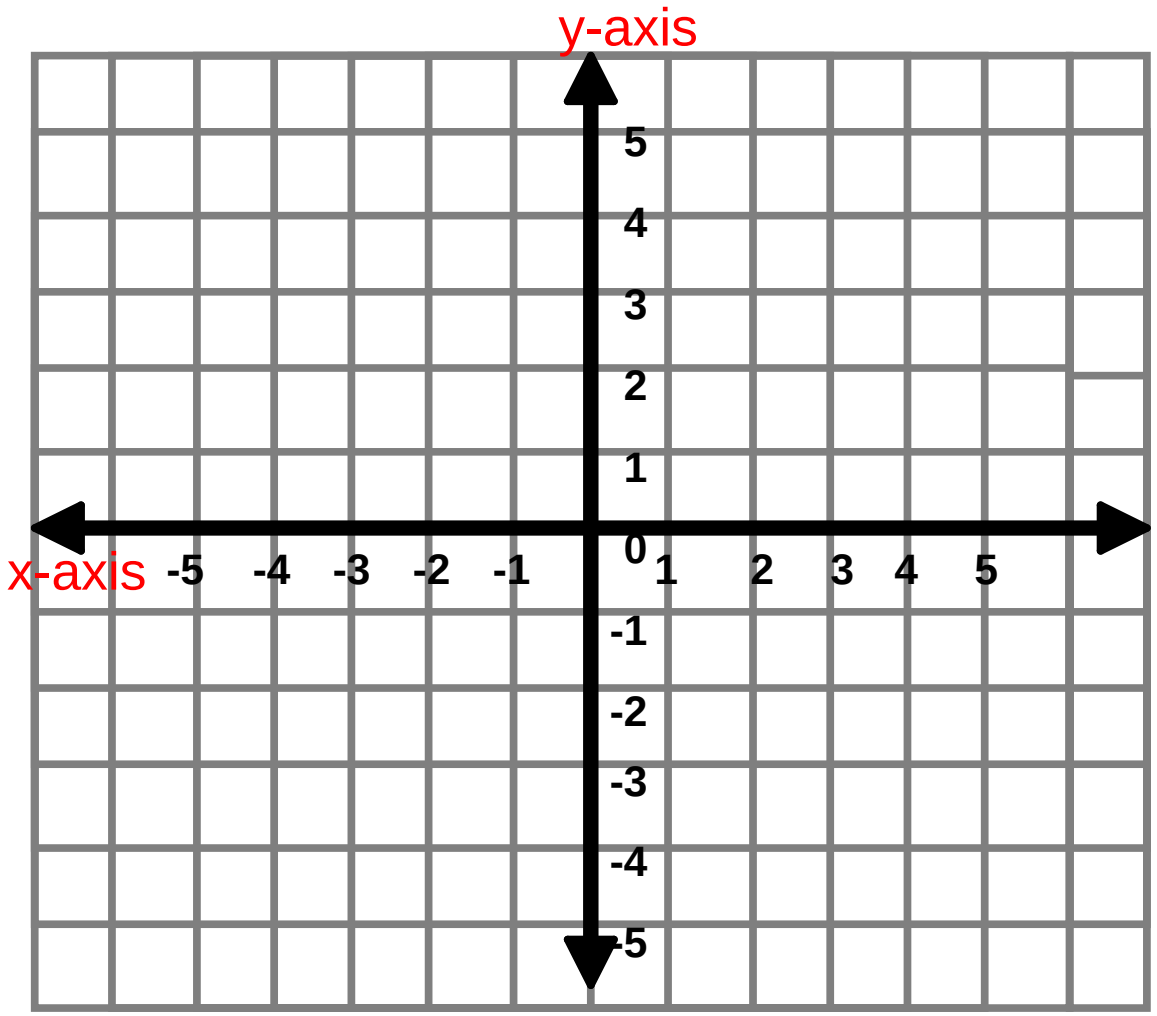
slope: _____ y-intercept: _____



Graphing Linear Equations

Graph the following equation using slope-intercept form.

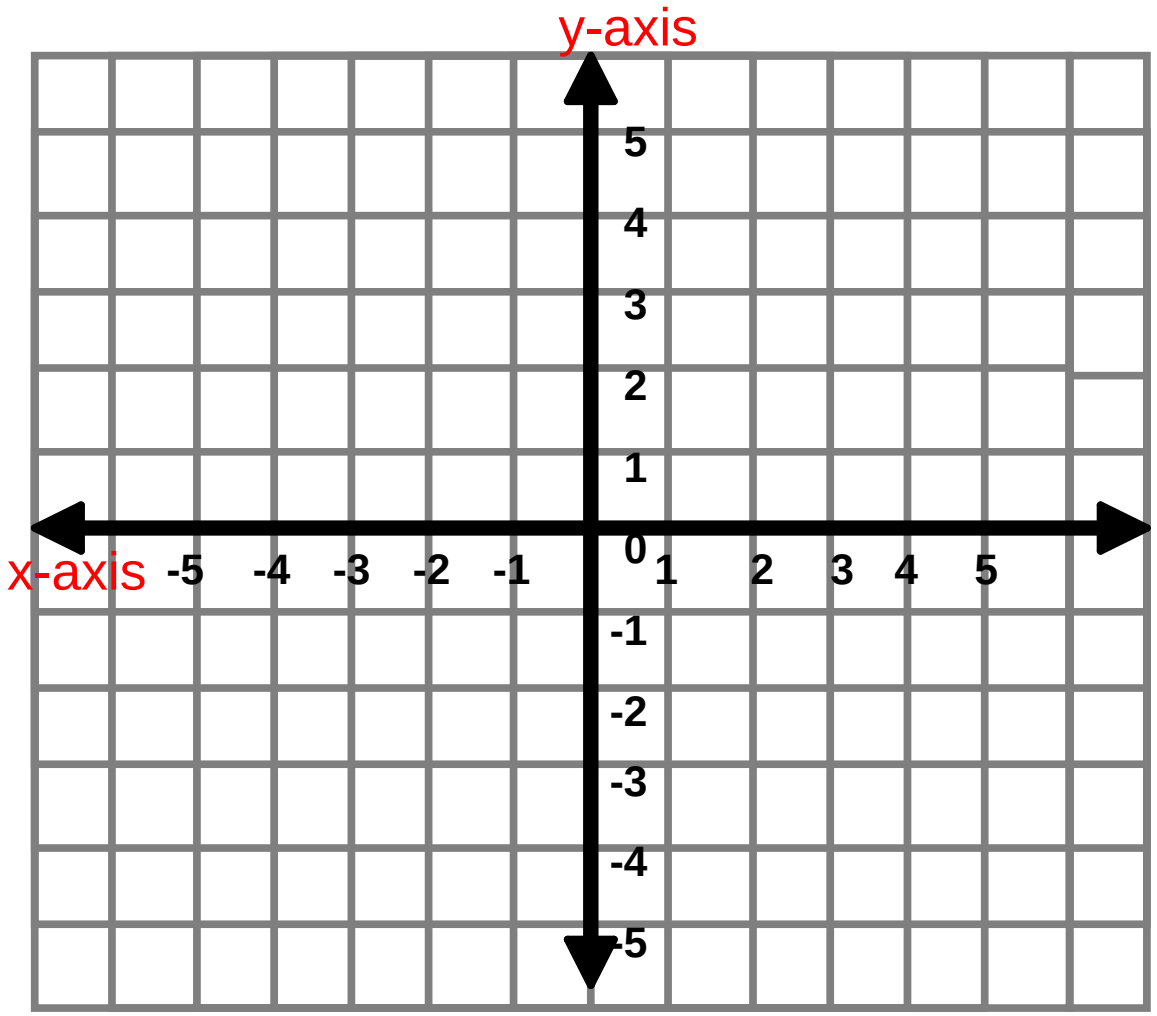
9) $y - 2 = \frac{3}{2}x$



Graphing Linear Equations

Graph the following equation using slope-intercept form.

10) $y - 1 = -\frac{2}{3}x$



Slope-Intercept Form

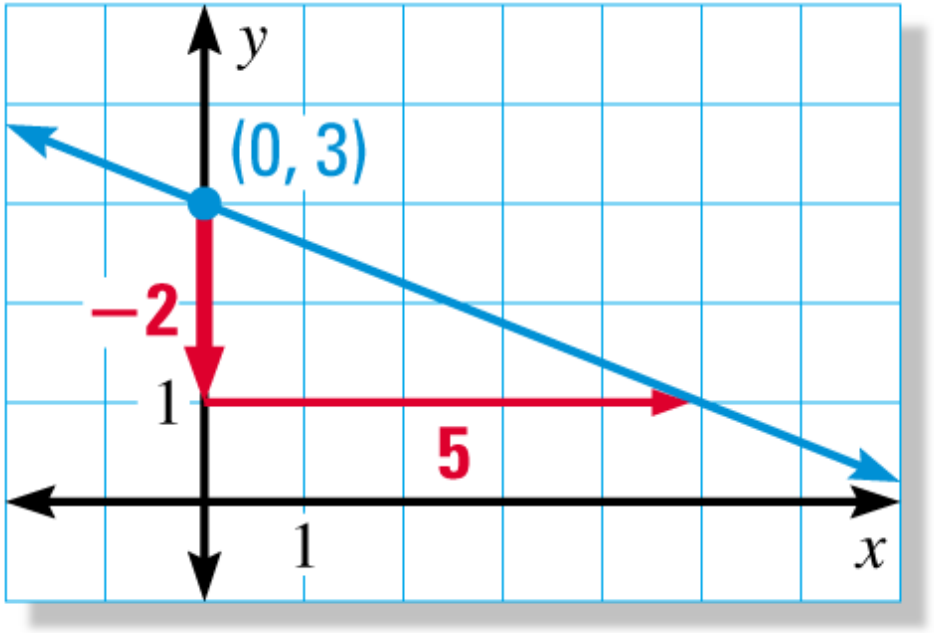
What is the equation of a line in slope-intercept form?

Example

11) Write an equation of the line with a slope of -2 and a y-intercept of 5.

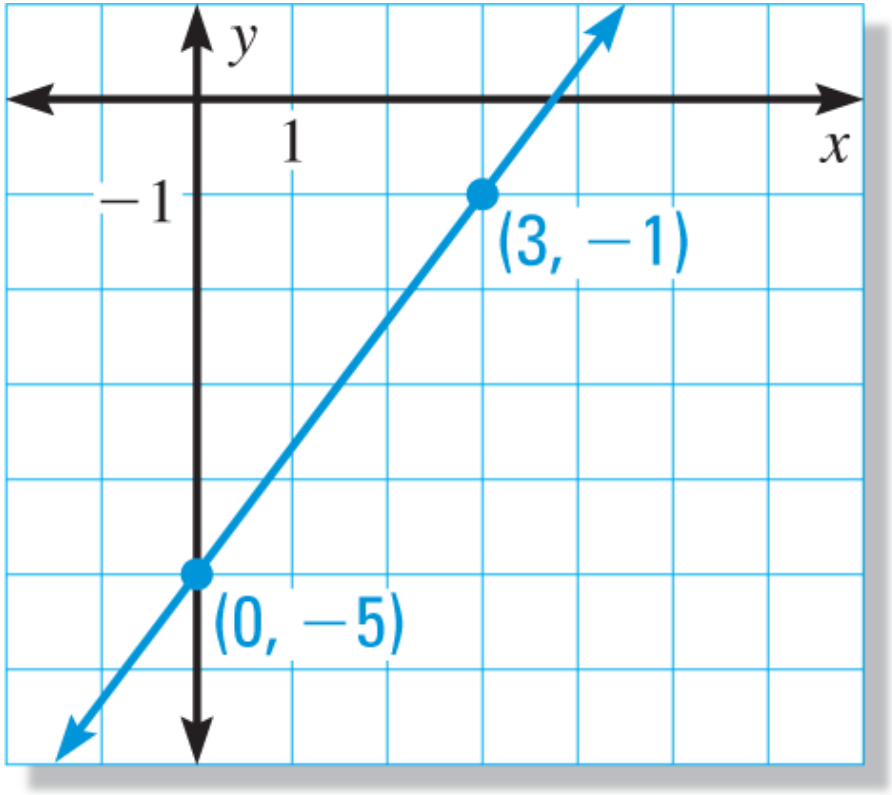
Example

12) Write an equation of the line shown.



Example

13) Write an equation of the line shown.



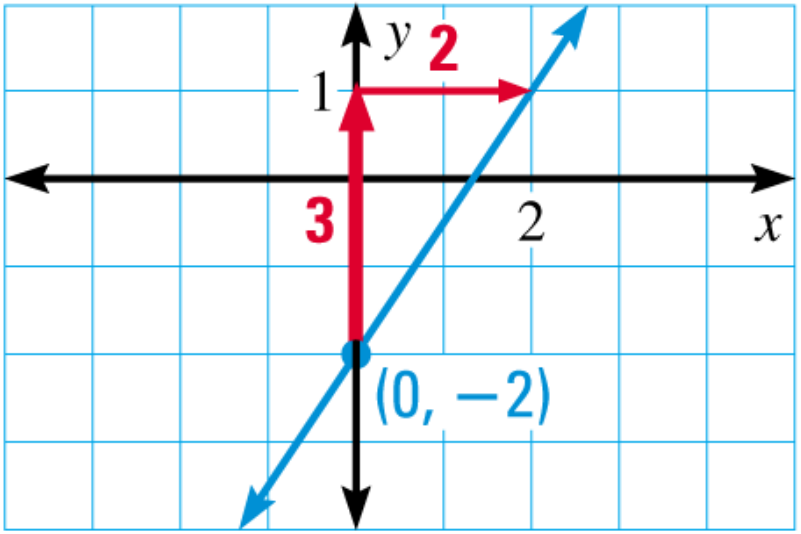
Practice

14) Write an equation of the line with a slope of 8 and a y-intercept of -7.

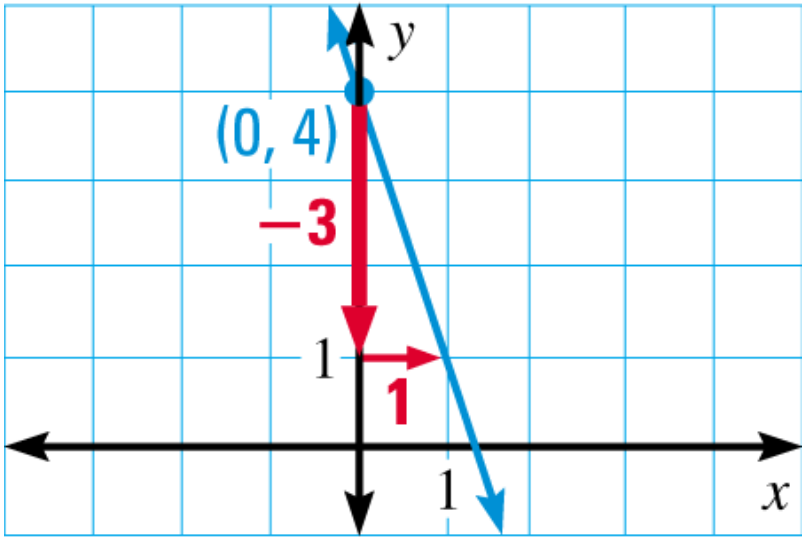
Practice

Write an equation of the line shown.

15)



16)



APPLICATION

The cost y (in dollars) of taking a taxi x miles is $y = 2.5x + 2$.
(a) Graph the equation. (b) Interpret the y-intercept and the slope.