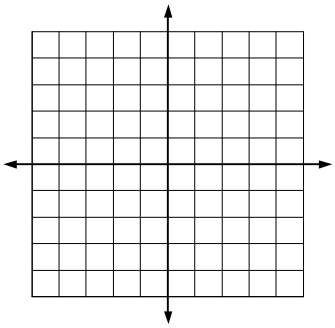
Section 1.3

Graphing lines and writing linear equations

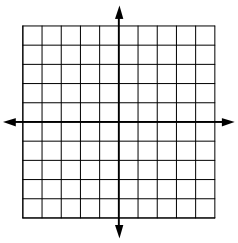
Graph the following equation.

$$y = 2x + 3$$

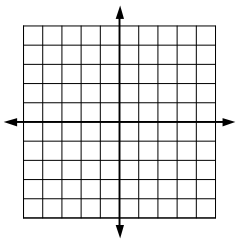


Graph the following equations.

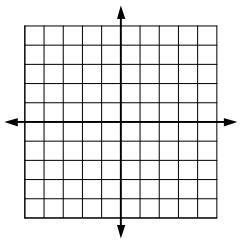
$y = -\frac{2}{3}x - 1$



$y = 3x$



$y = 3$



Slope-intercept

$$y = mx + b$$

slope y-intercept

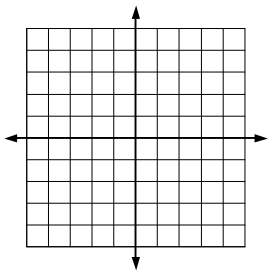
Point-Slope

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

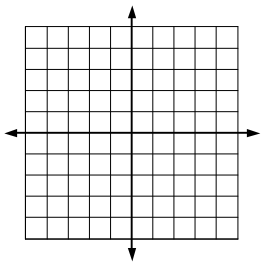
(3,–2) slope

Graph the following equations.

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

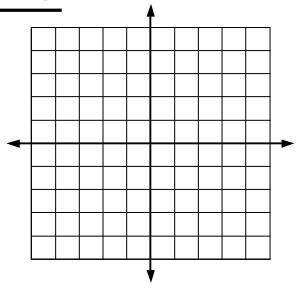


$$y + 3 = 2(x + 1)$$



Horizontal Lines

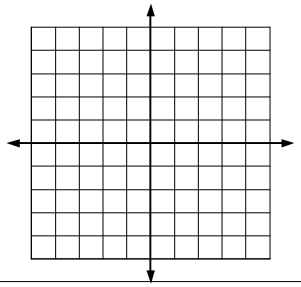
$y = -2$ $y = 3$ $y = 0$



$m =$

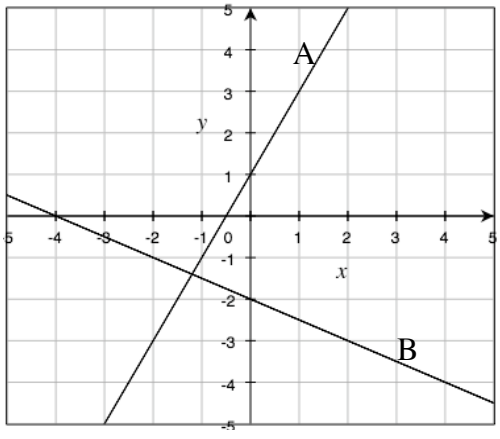
Vertical Lines

$x = -2$ $x = 3$ $x = 0$



$m =$

Perpendicular Lines



Equation A

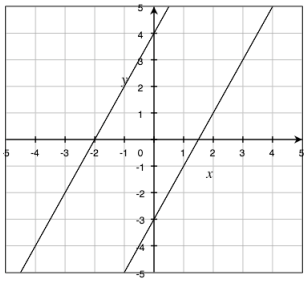
Equation B

Definition of Perpendicular Lines

Write the equation of the line perpendicular to:

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

Parallel Lines



What characteristic makes these lines parallel?

Definition of Parallel Lines

Write the equation of the line parallel to:

$2x - 3y = 4$

Finding the equation of a line using 2 points

#35 - 46

$(1,3)$ & $(-2,6)$ $\quad m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad y - y_1 = m(x - x_1)$

1) Find the slope
2) Use Point-slope form
3) Choose a point

Find the equation of the line given:

#47 - 56

1) $m = \frac{3}{5}$ $(4,-2)$

2) $(3,-1),(-2,-1)$

3) $(3,-4),(3,-2)$

4) $(-2,7)$ m is undefined

5) $\left(\frac{7}{8},\frac{3}{4}\right),\left(\frac{5}{4},-\frac{1}{4}\right)$

Write the equation of the lines through the given point (a) parallel to the given line and (b) perpendicular to the given line.

#63 - 70

Point	Line
$(-3,2)$	$x + y = 7$
$(2,1)$	$4x - 2y = 3$
$(2,5)$	$x - 4 = 0$

Find the slope and x & y-intercepts (if possible) of the equation of the line.

#25 - 34

1) $3x + 2y = 6$

2) $x - 5y = 4$

3) $y - 4 = 0$

4) $x = 2$

5) $3x + 2y = 1$

Use the point on the line and the slope of the line to find three additional points through which the line passes.

#17-24

Point	Slope
$(6,-4)$	$m = \frac{2}{3}$
$(-3,4)$	m is undefined

Example 8 Pg 32

Your company has purchased a $12,000 machine that has a useful life of 8 years. The salvage value at the end of 8 years is $2000. Write a linear equation that describes the book value each year.