Name:_____   Date:_____

Notes
Algebra Section 5.5
Pages 319-324

Goal: "You will write equations of parallel and perpendicular lines"

Vocabulary:

Parallel: Two lines are always the same _distance_ apart and will never intersect.

  Parallel lines have the same slope.

  Symbol: $\parallel$

Determine which lines, if any, are parallel. (put in slope-intercept form first)

1.

a. $y = 5x - 3$

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

c. $-10y - 2x = 0$
$y = -\frac{1}{5}x$

Slope= 5

Slope= $-\frac{1}{5}$

Slope= $-\frac{1}{5}$

Lines b and c are parallel because they have the same slope.

2.

a. $y = -3x + 1$

b. $-x + 3y = 1$
$y = \frac{1}{3}x + \frac{1}{3}$

c. $2x - 6y = 4$
$y = \frac{1}{3}x - \frac{2}{3}$

Slope= -3

Slope= $\frac{1}{3}$

Slope= $\frac{1}{3}$

Lines b and c are parallel because they have the same slope.

3.

a. $-1.5y + 4.5x = 6$

b. $y = 3x - 8$

c. $2x + 6y = -3$

$y = 3x - 4$

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

Slope= 3

Slope=3

Slope= $-\frac{1}{3}$

Lines a and b are parallel because they have the same slope.

Write an Equation with the Given Information:

A line is parallel to $y = 2x - 1$ and has a y-intercept of -5

$y = 2x - 5$

A line is parallel to $y = -\frac{1}{3}x + 4$ and has a y-intercept of 2

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

Write an Equation with the Given Information:

1) Passes through $(-3, -5)$ $\parallel$ to $y = 3x - 1$

2) What do you know? $x= -3$ $y= -5$ $m= 3$ $b= ?$

3) Plug the known values into $y = mx + b$.

$-5 = (3)(-3) + b$
$-5 = -9 + b$

4) Solve for the unknown value.

$\underline{+9 \quad\quad +9}$
$4 = b$

5) Write the equation.

Plug in the values for m and b. $y = 3x + 4$

Leave x and y as variables.

Try These: Follow the steps above.

1) Passes through $(-2, 11)$ $\parallel$ to $y = -x + 5$ $11 = -1(-2) + b$ plug in

$x= -2$ $y= 11$ $m= -1$ $b= ?$ $11 = 2 + b$ solve

$9 = b$

$y = -x + 9$ write equation

2) Passes through $(-3, 3)$ $\parallel$ to $y + 2x = 1$ Write in slope-intercept form. $y = -2x + 1$

$x= -3$ $y= 3$ $m= -2$ $b= ?$ $3 = -2(-3) + b$ plug in

$3 = 6 + b$ solve

$-3 = b$

$y = -2x - 3$ write equation