Warm-Up:

1) Is the following equation a linear function?

f(x) = 2x - 3

Yes

2) Write 6y = -3x + 12 in standard form.

$\frac{3x}{3} + \frac{6y}{3} = \frac{12}{3}$ $x + 2y = 4$

3) Find the x- and y-intercepts of the following equation. Then graph.

2x - 4y = 8

y-int:

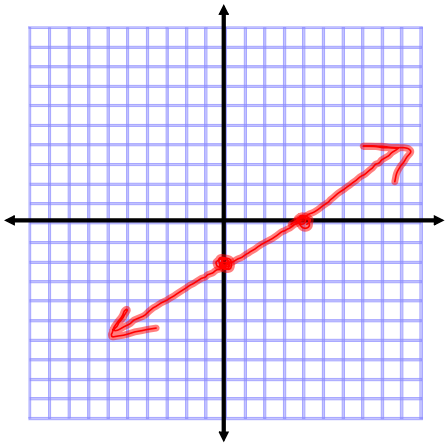
$2(0) - 4y = 8$

$y = -2$ $(0, -2)$

x-int:

$2x - 4(0) = 8$ $(4, 0)$

$x = 4$



30, 32, 50

30) $3x - 4y - 10 = 0$

y-int:

$-4y - 10 = 0$

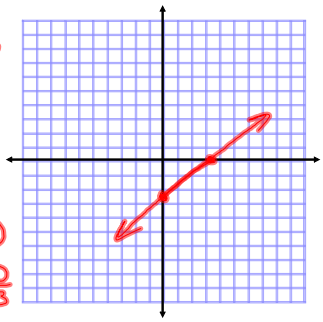
$\frac{-4y}{-4} = \frac{10}{-4}$

$y = -\frac{5}{2}$ $(0, -\frac{5}{2})$

x-int:

$3x - 10 = 0$

$\frac{3x}{3} = \frac{10}{3}$ $x = \frac{10}{3}$ $(\frac{10}{3}, 0)$



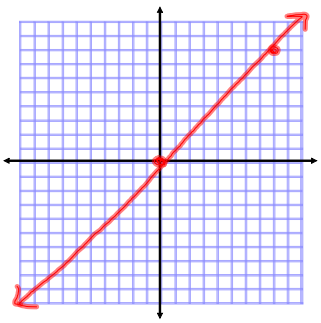
32) $y = x$

x-int + y-int:

(0,0)

$x = 8$ $y = 8$

(8,8)



50) m = magazines n = newspapers

$1.75m + 1.50n = 525$

Section 2-3: Slope

The slope of a line is the ratio of the change in y-coordinates to the change in x-coordinates.

The slope m of a line passing through (x_1, y_1) and (x_2, y_2) is

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \text{where } x_1 \neq x_2$$

Slopes of parallel lines are the same.

Slopes of perpendicular lines are opposite reciprocals.

Examples:

Find the slope of the line that passes through each pair of points.

1) (7, -2) (-9, 4)

$$m = \frac{4 + (-2)}{-9 - 7} = \frac{6}{-16} = -\frac{3}{8}$$

$$\frac{-2 - 4}{7 - (-9)} = \frac{-6}{16}$$

2) (8, 5) (8, -1.5)

$$\frac{-1.5 - 5}{8 - 8} = \frac{-6.5}{0}$$ undefined

Examples:

3) Graph the line through (1, -2) that is parallel to the line with equation x - y = -2

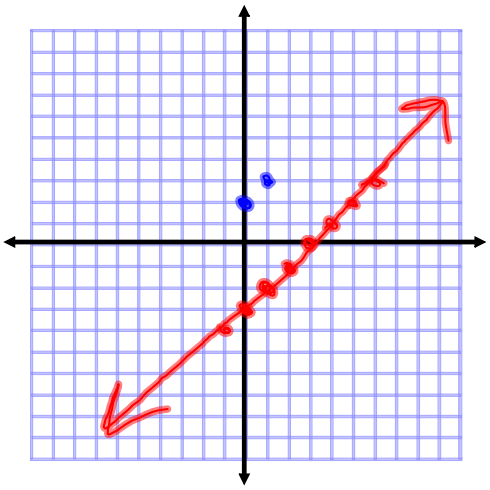
$x = 0 \quad -y = -2 \quad y = 2$

$(0, 2)$

$x = 1 \quad 1 - y = -2 \quad -y = -3 \quad y = 3$

$(1, 3)$

$m = \frac{1}{1} = 1 = \frac{-1}{-1}$

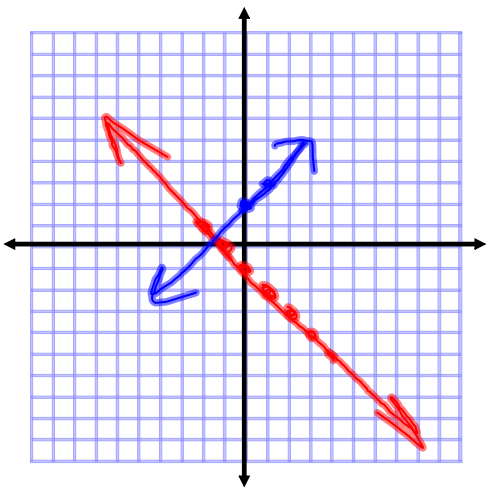


Examples:

4) Graph the line through (1, -2) that is perpendicular to the line with equation x - y = -2

$m = 1$

$m = -\frac{1}{1} = -1$



Homework: pg. 75-77 #13-26 all,
30-36 even, 53, 55, 56

Quiz Next Class over Sections 2-1, 2-2