

1) Given the following equations: determine the slope and y-intercept:

a. $y = -3x + 5$

Slope $-\frac{3}{1}$
 y-int 5

b. $2y - 8x = 12$

$2y - 8x = 12$
 $+8x \quad +8x$

$2y = 8x + 12$
 $\frac{2y}{2} = \frac{8x + 12}{2}$
 c. $y - 1 = -2x$
 5

$y = 4x + 6$
 Slope $\frac{4}{1}$
 y-int 6

~~$\frac{y}{5} - 1 = -2x(5)$~~
 $y - 5 = -10x$
 $+5 \quad +5$

$y = -10x + 5$
 Slope $-\frac{10}{1}$
 y-int 5

2) Is the following relation a function? Yes or no?

yes a. $y = -5x + 14$

No b. $3x + 9y^2 = -15$

yes c. $y = -2$

No d. $x = 1$ ← missing "y"

No e. $x^2 - y^2 = 4$

Functions have y to the 1st power

3) Find the x-intercept and y-intercept of each:

a. $3x + 6y = 36$

~~$3x + 6y = 36$~~

x-int
 $3x + 6(0) = 36$

$3x = 36$
 $x = 12$

y-int
 $3(0) + 6y = 36$

$6y = 36$
 $y = 6$

b. $2x - y = -11$

x-int
 $2x - 0 = -11$

$2x = -11$
 $x = -11/2$ or -5.5

y-int
 $2(0) - y = -11$

$-y = -11$
 $y = 11$

4) Given the following information, determine the equation of the line in all 3 formats: point slope, slope/intercept, and standard form

a. Line has a slope of $\frac{1}{4}$ and passes through the point $(-8, -1)$

Point slope $\rightarrow y - y_1 = m(x - x_1)$
 $y - (-1) = \frac{1}{4}(x - (-8))$
 $y + 1 = \frac{1}{4}(x + 8)$

Slope/intercept $\rightarrow y + 1 = \frac{1}{4}(x + 8)$
 $y + 1 = \frac{1}{4}x + 2$
 $y = \frac{1}{4}x + 1$

$(4)y = \frac{1}{4}x + 1$
 $4y = x + 4$
 $-4 \quad -4$
 $\frac{4y - 4}{-4} = \frac{x + 4}{-4}$
 $-4 = x - 4y$
 $x - 4y = -4$
 Standard form

b. Line has a slope of -2 , and passes through the point $(-3, 11)$

Point slope $\rightarrow y - y_1 = m(x - x_1)$
 $y - 11 = -2(x - (-3))$
 $y - 11 = -2(x + 3)$

Slope/intercept $\rightarrow y - 11 = -2(x + 3)$
 $y - 11 = -2x - 6$
 $+11 \quad +11$
 $y = -2x + 5$

$y = -2x + 5$
 $+2x \quad +2x$
 $2x + y = 5$
 Standard form

c. Line passes through the two points $(-2, -4)$ and $(1, 5)$

Find Slope

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

$$\frac{5 - (-4)}{1 - (-2)}$$

$$\frac{5 + 4}{1 + 2}$$

$$\frac{9}{3} \quad m = 3$$

Point/slope $\rightarrow y - y_1 = m(x - x_1)$
 $y - 5 = 3(x - 1)$

Slope/intercept $\rightarrow y - 5 = 3(x - 1)$
 $y - 5 = 3x - 3$
 $+5 \quad +5$
 $y = 3x + 2$

Slope/intercept $\rightarrow y = 3x + 2$
 $-3x \quad -3x$
 $-3x + y = 2$ Nope

Standard Form \rightarrow
 $y = 3x + 2$
 $-2 \quad -2$
 $y - 2 = 3x$
 $-y - 2 = 3x - y$
 $3x - y = -2$