

SEW HW 1

1. Solve the following equations for x .

$$\frac{2x-3}{4} - \frac{2x(4-x)}{2 \times 2} = \frac{x+1}{3}$$

$$\frac{2x-3-8+2x}{4} = \frac{x+1}{3}$$

$$\frac{4x-11}{4} = \frac{x+1}{3} \rightarrow 12x-33 = 4x+4$$

$$\rightarrow 12x-4x = 33+4 \rightarrow 8x = 37$$

$$x = 37/8$$

$$11x+2 = -3(x-3)$$

$$11x+2 = -3x+9$$

$$11x+3x = 9-2$$

$$14x = 7$$

$$x = \frac{7}{14} = \frac{1}{2}$$

2. Solve the following inequality. Graph your solution and write it in interval form.

$$|2x+5| < 3$$

$$-5 \quad -5 \quad -5$$

$$-3 < 2x+5 < 3 \rightarrow -8 < 2x < -2 \rightarrow -4 < x < -1$$



3. A yard is 3 times as long as it is wide. 176 feet of fencing is needed to enclose the yard. Find the dimensions of the yard.

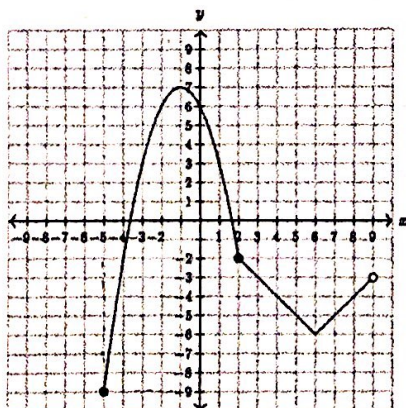
$$L = 3W \text{ (1)}$$

$$2(L+W) = 176$$

$$L+W = 88 \text{ (2)} \quad 3W+W = 88 \rightarrow 4W = 88 \rightarrow W = \frac{88}{4} = 22$$

$$L = 3 \times 22 = 66$$

4. Given the graph below of $f(x)$, please answer the following.



- a. State the domain and range of f .

$$\text{Domain: } -5 \leq x < 9, \text{ Range: } -9 \leq y < 7$$

- b. Find the following.

$$f(0) = 6$$

$$f(2) = -2$$

$$f(6) = -6$$

- c. For what x is $f(x) = -9$?

$$x = -5$$

5. You buy a car for \$10,500, and its value (resale price) depreciates by \$1,500 per year. The value y (in \$) can be represented by $y = 10,500 - 1,500x$, where x is the number of years after your purchase of the car.

a. How much will the car be worth after 2 years? $x = 2$

$$y = 10,500 - 1,500(2) = 10,500 - 3,000 = \boxed{7,500}$$

b. After how many years will it be worth \$4,500? $y = 4,500$

$$4,500 = 10,500 - 1,500x \rightarrow 1,500x = 10,500 - 4,500$$

$$x = \frac{6,000}{1,500} = \boxed{4 \text{ years}}$$

c. Determine the y -intercept, and interpret its meaning in this context.

$$\boxed{y\text{-int: } 10,500} \rightarrow (0, 10,500)$$

The purchase price at $x = 0 \rightarrow$ original price with no depreciation.

d. Determine the x -intercept and interpret its meaning in this context.

$$\boxed{x\text{-int: } 7} \rightarrow (7, 0)$$

$$y = 0 \rightarrow 10,500 - 1,500x = 0 \rightarrow x = 7$$

It represents the time that the car has zero value.

e. What is the slope, and interpret its meaning in this context.

Slope: $-1,500 \rightarrow$ annual price depreciation

\rightarrow coefficient of x in the equation.

f. Sketch a graph of $y = 10,500 - 1,500x$

