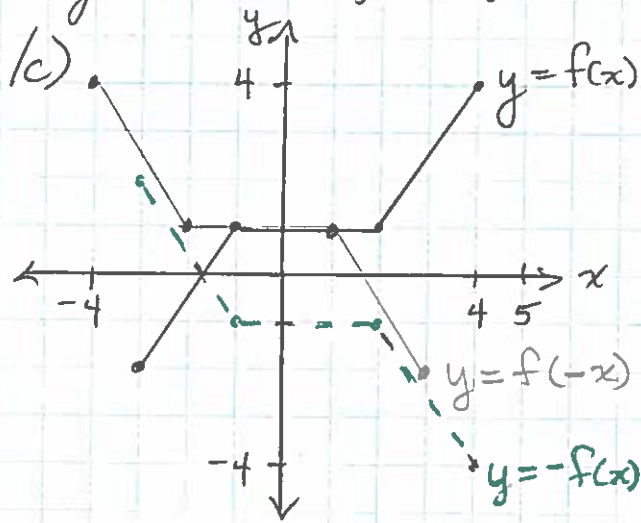


Page 203 #1c, 2abc, 3, 5, 7, 10



2 a)  $y = \sqrt{x+3}$  red graph  
blue graph is  $y = -f(x)$

$$y = -\sqrt{x+3}$$

b)  $y = x^2 - 3$  red graph  
blue graph is  $y = -f(x)$

$$y = -(x^2 - 3)$$

$$y = -x^2 + 3$$

c) red graph is  $y = \sqrt{x} + 3$   
blue graph is  $y = -f(x)$

$$y = -(\sqrt{x} + 3)$$

$$y = -\sqrt{x} - 3$$

3. red graph

blue graph is  $y = f(-x)$

a)  $y = x - 3$

$$y = (-x) - 3$$

$$y = -x - 3$$

b)  $y = \sqrt{x+2}$

$$y = \sqrt{(-x)+2}$$

$$y = \sqrt{-x+2}$$

c)  $y = \sqrt{x} - 2$

$$y = \sqrt{(-x)} - 2$$

$$y = \sqrt{-x} - 2$$

d)  $y = (x-4)^2$

$$y = [(-x)-4]^2$$

$$y = (-x-4)^2$$

$$y = [-1(x+4)]^2$$

$$y = (-1)^2(x+4)^2$$

$$y = (x+4)^2$$

Unit 4 lesson 4

Pg 203 # 5, 7, 10.

Pg ② of ④

a)  $f(x) = 2x - 4$

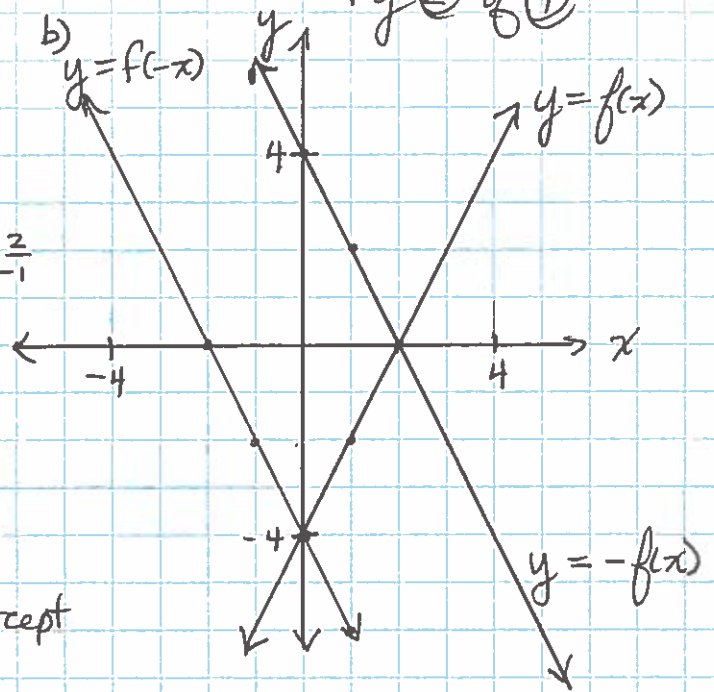
$b = -4$   
 $m = \frac{2}{1}$

$f(-x) = -2x - 4$

$b = -4$   
 $m = -\frac{2}{1}$  or  $\frac{2}{-1}$

$-f(x) = -2x + 4$

$b = 4$   
 $m = -\frac{2}{1}$



c) for  $y = f(-x)$ , reflection

is in  $y$ -axis so  $y$ -intercept is invariant  $(0, -4)$

for  $y = -f(x)$ , reflection

is in  $x$ -axis so  $x$ -intercept is invariant  $(2, 0)$ .

d)  $f(x)$ :  $D: \{x \in \mathbb{R}\}$ ,  $R: \{y \in \mathbb{R}\}$

$f(-x)$ :  $D: \{x \in \mathbb{R}\}$ ,  $R: \{y \in \mathbb{R}\}$

$-f(x)$ :  $D: \{x \in \mathbb{R}\}$ ,  $R: \{y \in \mathbb{R}\}$

Pg 203 # 7, 10.

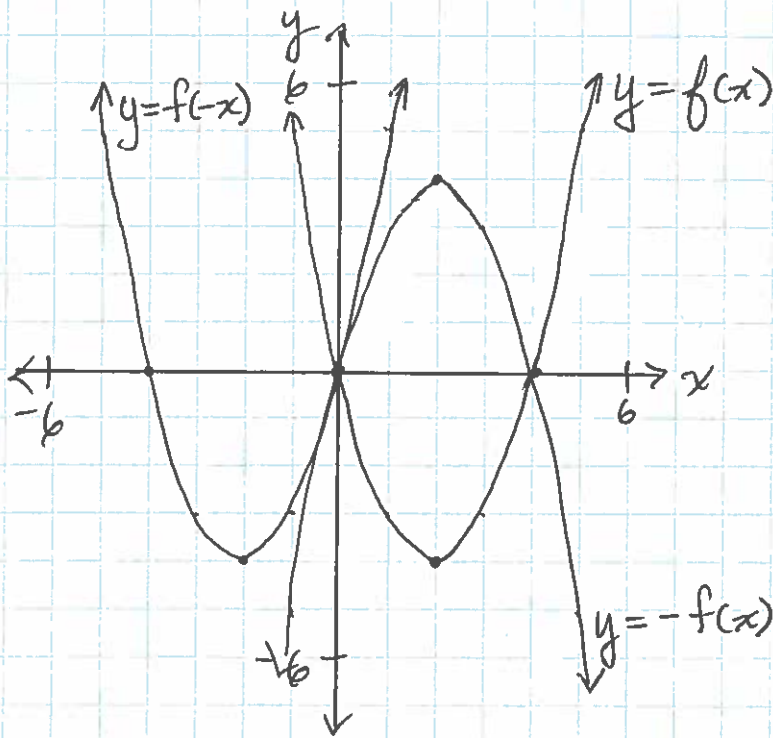
$$7.a) f(x) = x^2 - 4x$$

$$-f(x) = -(x^2 - 4x)$$

$$= -x^2 + 4x$$

$$f(-x) = (-x)^2 - 4(-x)$$

$$= x^2 + 4x$$



$$b) f(x): x^2 - 4x = 0$$

$$x(x-4) = 0$$

$$x = 0, x = 4$$

$$a = 1 \text{ so vertex is at } x = 2$$

$$f(2) = 2^2 - 4(2)$$

$$= 4 - 8$$

$$= -4$$

$$V(2, -4)$$

to graph  
 $-f(x)$  reflect in  
 $x$ -axis.

$(0, 0) \Rightarrow (0, 0)$   
 $(4, 0) \Rightarrow (4, 0)$   
 $(2, -4) \Rightarrow (2, 4)$ .

to graph  
 $f(-x)$  reflect in  
 $y$ -axis

$(0, 0) \Rightarrow (0, 0)$   
 $(4, 0) \Rightarrow (-4, 0)$   
 $(2, -4) \Rightarrow (-2, -4)$

c)  $-f(x) \Rightarrow x$ -int's are invariant  
 $(0, 0), (4, 0)$

$f(-x) \Rightarrow y$ -int is invariant  
 $(0, 0)$ .

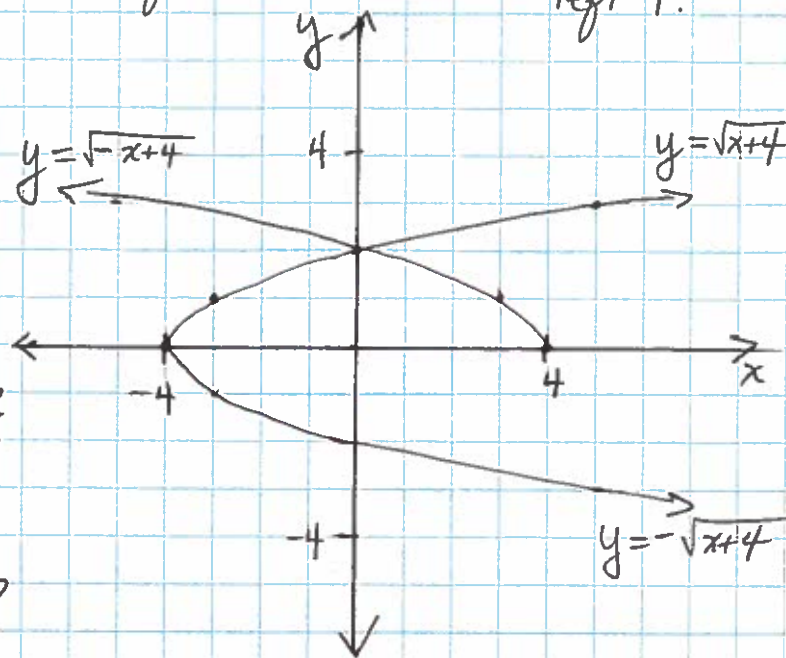


Pg 203 #10

a)  $f(x) = \sqrt{x+4}$

$-f(x) = -\sqrt{x+4}$

$f(-x) = \sqrt{-x+4}$   
 $= \sqrt{-x+4}$

b)  $f(x) = \sqrt{x+4}$  is  $y = \sqrt{x}$  shifted left 4.

c)  $f(x)$ : D:  $\{x \in \mathbb{R} \mid x \geq -4\}$

R:  $\{y \in \mathbb{R} \mid y \geq 0\}$

$-f(x)$ : D:  $\{x \in \mathbb{R} \mid x \geq -4\}$

R:  $\{y \in \mathbb{R} \mid y \leq 0\}$

$f(-x)$ : D:  $\{x \in \mathbb{R} \mid x \leq 4\}$

R:  $\{y \in \mathbb{R} \mid y \geq 0\}$ .