

## Today's Plan:

**Learning Target (standard):** I will describe and graph functions as composites of transformations.

**Students will:** Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

**Assessment:** Board work, homework check and homework assignment

**Differentiation:** Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Write each function as a composite of functions.

$$f(x) = -3(4 - 2x)^3 - 2$$

parent:  $f(x) = x^3$

1)  $f(x) = -x^3$  r<sub>x</sub>

2)  $f(x) = -(-x)^3$  r<sub>y</sub>

3)  $f(x) = -3(-x)^3$  v.s. by 3

4)  $f(x) = -3(-2x)^3$  h.c. by  $\frac{1}{2}$

5)  $f(x) = -3(-2(x-2))^3$  shift right 2

6)  $f(x) = -3(4-2x)^3 - 2$  shift down 2

Write each function as a composite of functions.

$$f(x) = \frac{4}{3} \sqrt{6-3x} + 4$$

parent:  $f(x) = \sqrt{x}$

1)  $f(x) = \sqrt{-x}$   $r_y$

2)  $f(x) = \frac{4}{3} \sqrt{-x}$  v.s. by  $\frac{4}{3}$

3)  $f(x) = \frac{4}{3} \sqrt{-3x}$  h.c. by  $\frac{1}{3}$

4)  $f(x) = \frac{4}{3} \sqrt{-3(x-2)}$  shift right 2

5)  $f(x) = \frac{4}{3} \sqrt{6-3x} + 4$  shift up 4

Write each function as a composite of functions.

$$f(x) = -4 \left| -\frac{3}{2}x + 4 \right| - 3$$

parent:  $f(x) = |x|$

1)  $f(x) = -|x|$   $r_x$

2)  $f(x) = -|-x|$   $r_y$

3)  $f(x) = -4|-x|$  v.s. by 4

4)  $f(x) = -4 \left| -\frac{3}{2}x \right|$  h.c. by  $\frac{2}{3}$

5)  $f(x) = -4 \left| -\frac{3}{2} \left( x - \frac{8}{3} \right) \right|$  shift right  $\frac{8}{3}$

6)  $f(x) = -4 \left| -\frac{3}{2}x + 4 \right| - 3$  shift down 3

Graph using Transformations:

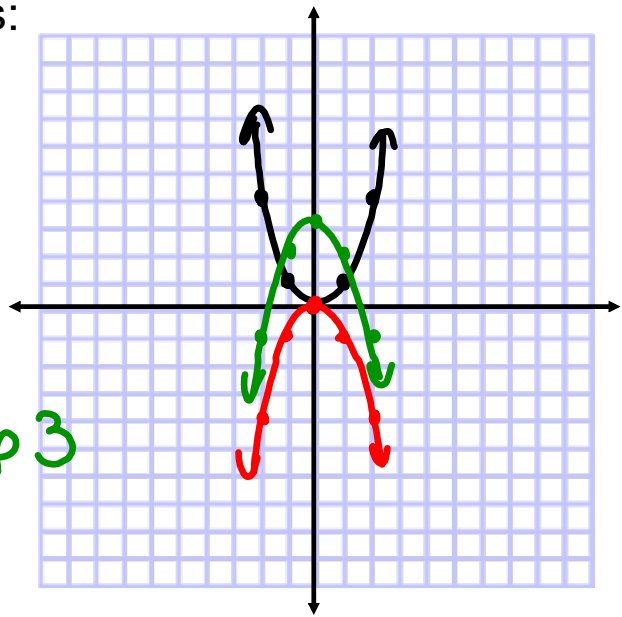
$$f(x) = -x^2 + 3$$

parent:  $f(x) = x^2$

1)  $f(x) = -x^2$  r\_x

2)  $f(x) = -x^2 + 3$  shift up 3

x	y
-2	4
-1	1
0	0
1	1
2	4



Graph using Transformations:

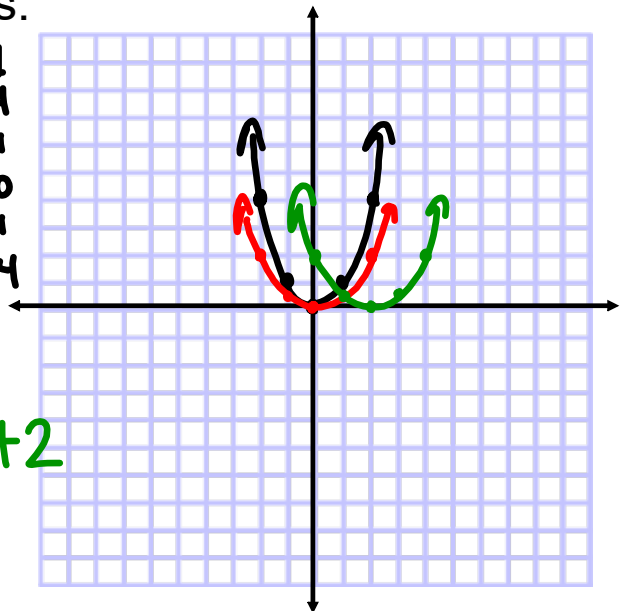
$$f(x) = \frac{1}{2}(x-2)^2$$

parent:  $f(x) = x^2$

1)  $f(x) = \frac{1}{2}x^2$  v.c. by  $\frac{1}{2}$

2)  $f(x) = \frac{1}{2}(x-2)^2$  shift right 2

x	y
-2	4
-1	1
0	0
1	1
2	4



Graph using Transformations:

$$y = 4|3 - x| - 6$$

parent:  $y = |x|$

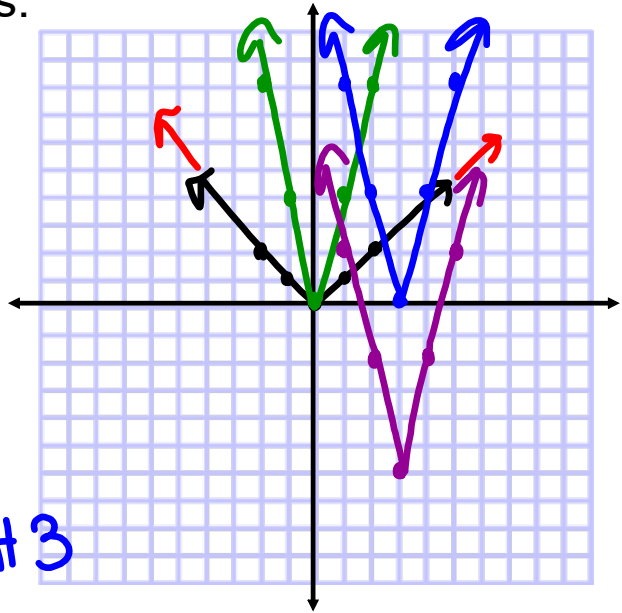
1)  $y = |-x|$  r<sub>y</sub>

2)  $y = 4|-x|$  v.s. by 4

3)  $y = 4|-1(x-3)|$  shift right 3

4)  $y = 4|3-x| - 6$  shift down 6

x	y
-2	2
-1	1
0	0
1	1
2	2



Graph using Transformations:

$$f(x) = -3\sqrt{\frac{1}{2}x + 2} - 3$$

parent:  $f(x) = \sqrt{x}$

1)  $f(x) = -\sqrt{x}$  r<sub>x</sub>

2)  $f(x) = -3\sqrt{x}$  v.s. by 3

3)  $f(x) = -3\sqrt{\frac{1}{2}x}$  h.s. by 2

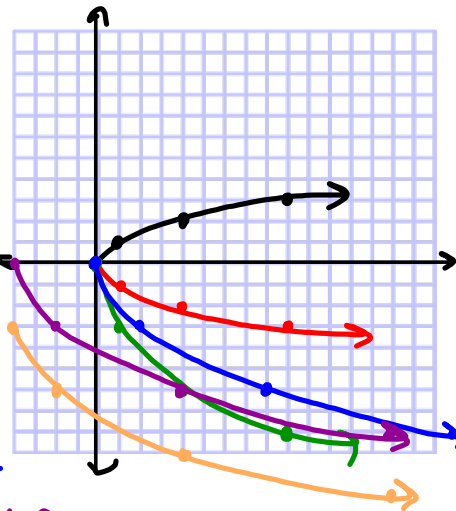
4)  $f(x) = -3\sqrt{\frac{1}{2}(x+4)}$  shift left 4

5)  $f(x) = -3\sqrt{\frac{1}{2}x + 2} - 3$  shift down 3

D:  $\{x | x \geq -4\}$

R:  $\{y | y \leq -3\}$

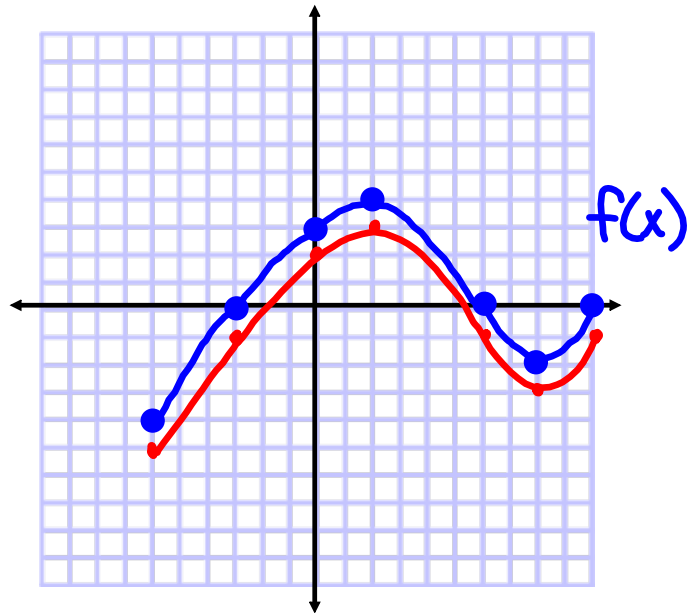
x	y
0	0
1	1
4	2
9	3



Graph the stated functions using the given:

$$a) F(x) = f(x) - 1$$

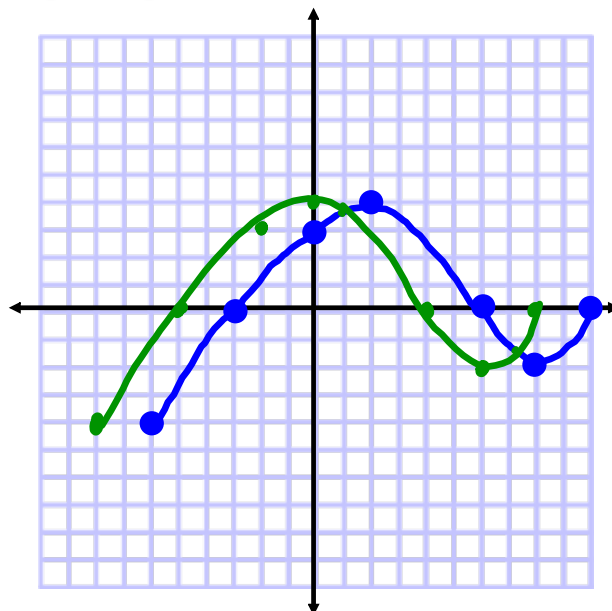
Shift down 1



Graph the stated functions using the given:

$$b) G(x) = f(x + 2)$$

Shift left 2



# Assignment:

p.150 #50-60 even