

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.



Go over your graphs with someone in class.

QUIZ tomorrow!



Graph using Transformations. Find the domain and range.

$$f(x) = -\frac{1}{2}\sqrt{6-3x} + 4$$

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

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

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

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

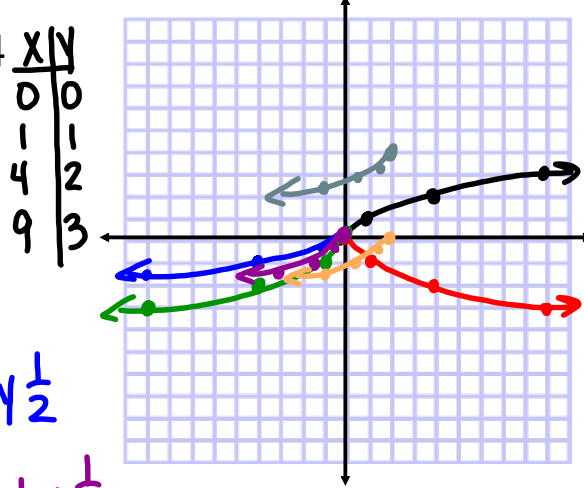
4) $f(x) = -\frac{1}{2}\sqrt{-3x}$ h.c. by $\frac{1}{3}$

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

6) $f(x) = -\frac{1}{2}\sqrt{6-3x} + 4$ shift up 4

D: $\{x | x \leq 2\}$

R: $\{y | y \leq 4\}$



Graph using Transformations. Find the domain and range.

$$f(x) = -3 - 2\left|\frac{1}{2}x + 2\right|$$

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

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

2) $f(x) = -2|x|$ v.s. by 2

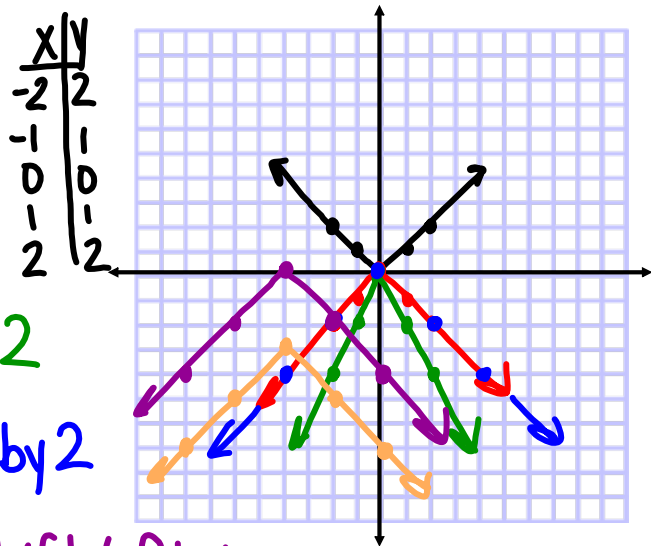
3) $f(x) = -2\left|\frac{1}{2}x\right|$ h.s. by 2

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

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

D: \mathbb{R}

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



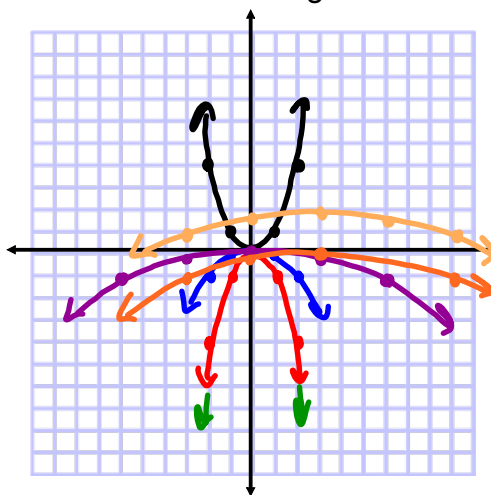
Graph using Transformations. Find the domain and range.

$$y = -\frac{1}{4}\left(-\frac{1}{3}x+1\right)^2 + 2$$

parent: $y = x^2$

- 1) $y = -x^2$ r_x
- 2) $y = -(-x)^2$ r_y
- 3) $y = -\frac{1}{4}(-x)^2$ v.c. by $\frac{1}{4}$
- 4) $y = -\frac{1}{4}\left(-\frac{1}{3}x\right)^2$ h.s. by 3
- 5) $y = -\frac{1}{4}\left(-\frac{1}{3}(x-3)\right)^2$ shift right 3
- 6) $y = -\frac{1}{4}\left(-\frac{1}{3}x+1\right)^2 + 2$ shift up 2

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



D: \mathbb{R}
 R: $\{y \mid y \leq 2\}$

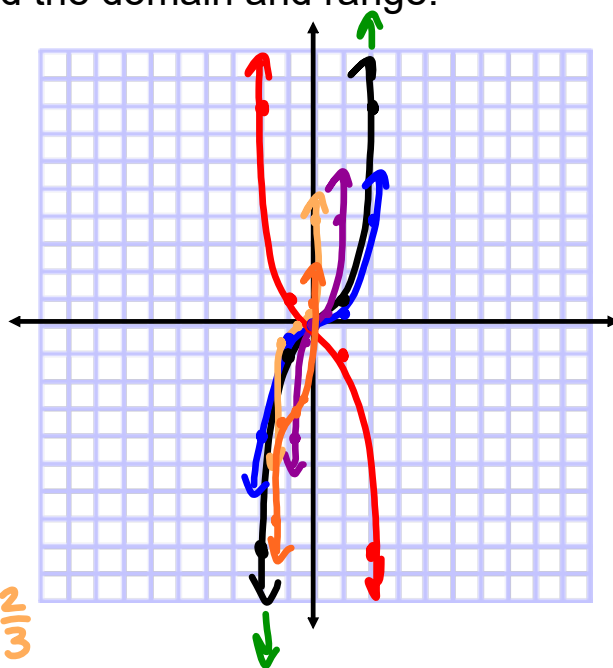
Graph using Transformations. Find the domain and range.

$$y = -\frac{1}{2}(-3x-2)^3 - 3$$

parent: $y = x^3$

- 1) $y = -x^3$ r_x
- 2) $y = -(-x)^3$ r_y
- 3) $y = -\frac{1}{2}(-x)^3$ v.c. by $\frac{1}{2}$
- 4) $y = -\frac{1}{2}(-3x)^3$ h.c. by $\frac{1}{3}$
- 5) $y = -\frac{1}{2}(-3(x+\frac{2}{3}))^3$ shift left $\frac{2}{3}$
- 6) $y = -\frac{1}{2}(-3x-2)^3 - 3$ shift down 3

| x | y |
|----|----|
| -2 | -8 |
| -1 | -1 |
| 0 | 0 |
| 1 | 1 |
| 2 | 8 |



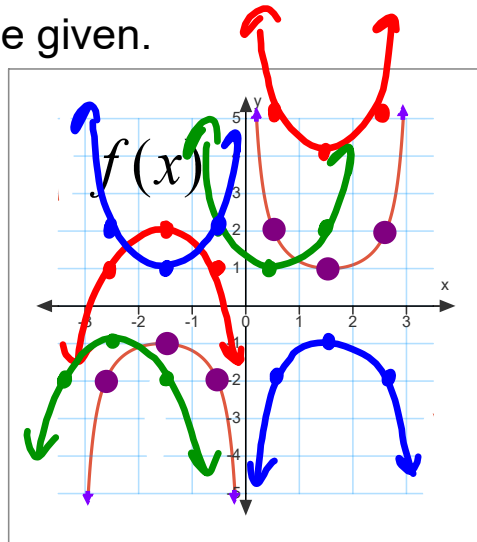
D: \mathbb{R}
 R: \mathbb{R}

Graph the stated functions using the given.

a) $F(x) = f(x) + 3$
 Shift up 3

b) $G(x) = f(x + 1)$
 Shift left 1

c) $P(x) = -f(x)$
 $\uparrow x$

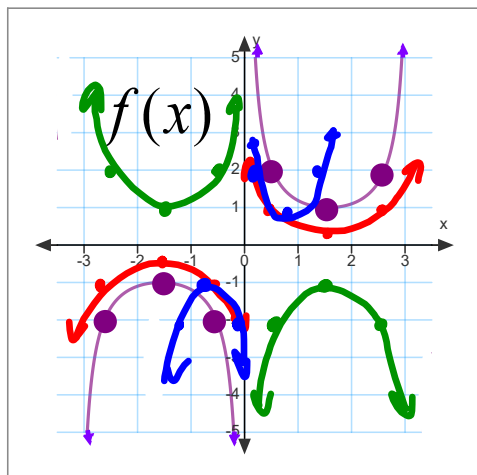


Graph the stated functions using the given.

d) $Q(x) = \frac{1}{2} f(x)$
 V.C. by $\frac{1}{2}$

e) $g(x) = f(-x)$
 $\uparrow y$

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



Graph using transformations. Find the domain and range.

$$1) f(x) = -2(-x - 1)^2$$

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

$$2) y = -\frac{1}{2}\sqrt{4x - 12} + 2$$

$$5) f(x) = -\frac{1}{4}\left(-\frac{1}{2}x - 2\right)^3 - 2$$

$$3) f(x) = -3\left|\frac{1}{2}x + 2\right| + 3$$

*** QUIZ tomorrow! ***