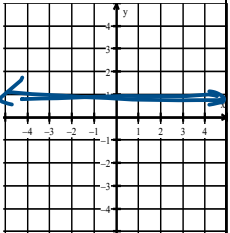
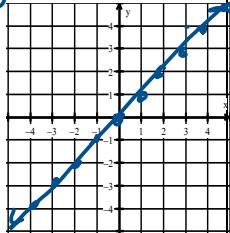
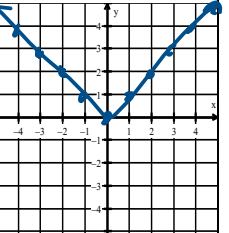
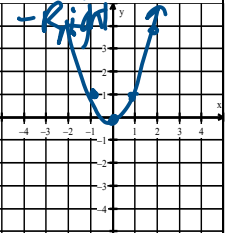


1.2 Transformations of Linear, Absolute Value, Quadratic Functions (Day3)

OBJ: Write functions representing translations, reflections, stretches, shrinks, and combinations of transformations.

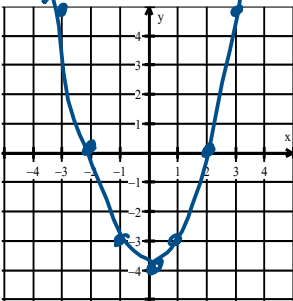
Parent Functions

Family	Constant	Linear	Absolute Value	Quadratic
Parent	$y = 1$	$y = x$	$y = x $	$y = x^2$
General	$y = k$	$y = ax + b$	$y = a x-h + k$	$y = a(x-h)^2 + k$
Graph				
Domain	\mathbb{R}	\mathbb{R}	\mathbb{R}	\mathbb{R}
Range	$y \geq 1$	\mathbb{R}	$y \geq 0$	$y \geq 0$

1. Describe the transformation. Graph the function. Find the domain, range, and zeros.

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

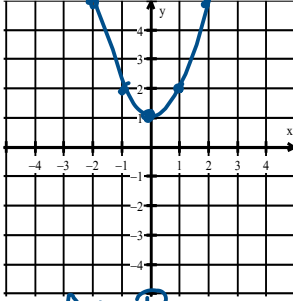
Down 4



D: \mathbb{R}
R: $y \geq -4$
Z: $x = -2, 2$

b) $f(x) = x^2 + 1$

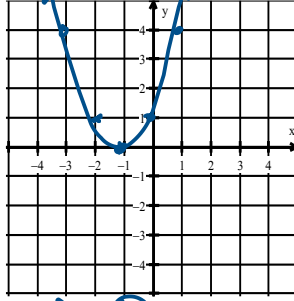
Up 1



D: \mathbb{R}
R: $y \geq 1$
Z: No Real Zeros

c) $f(x) = (x+1)^2$

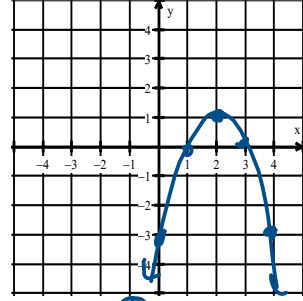
Left 1



D: \mathbb{R}
R: $y \geq 0$
Z: $x = -1$

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

Reflect x-axis, Right 2, up 1



D: \mathbb{R}
R: $y \leq 1$
Z: $x = 1, 3$

2. Write a function g whose graph represents the given transformation of the graph of function $f(x) = x^2$.

a) Up 10

$$y = x^2 + 10$$

b) Reflect thru x-axis

$$y = -x^2$$

c) Left 4 units

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

d) Right 5, Down 3

$$y = (x-5)^2 - 3$$

3. Write a function g whose graph represents the given transformation of the graph of function f .

a. ~~Let $f(x) = (x+1)^2$~~ Translate 8 units down.

$$g(x) = f(x) - 8$$

b. ~~Let $f(x) = |x| - 3$~~ Translate 5 units to the left.

$$g(x) = f(x+5)$$

4. a) Write a function g that is a translation 4 units up of the graph of $f(x)$.

$$g(x) = f(x) + 4$$

b) Write a function h that is a translation 6 units left followed by a reflection in the x-axis of the graph of $f(x)$.

$$h(x) = -f(x+6)$$

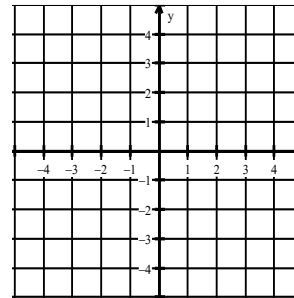
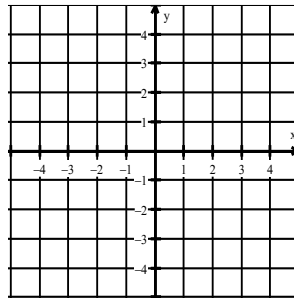
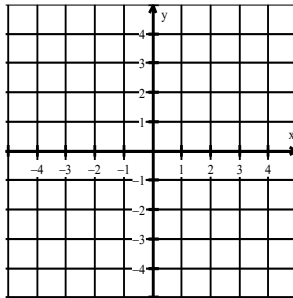
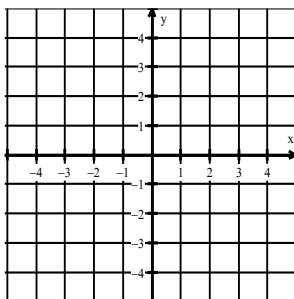
1. Name & graph each function. Describe the transformation. Find the domain, range, and zeros.

a) $f(x) = \frac{2}{3}|x-2|$

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

c) $f(x) = (x+1)^2 - 4$

d) $f(x) = -|x-3|+1$

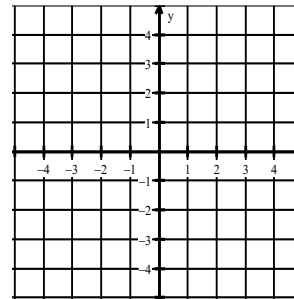
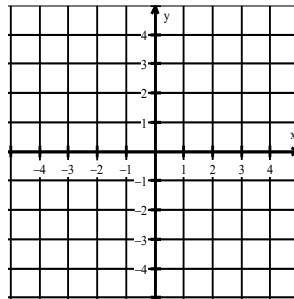
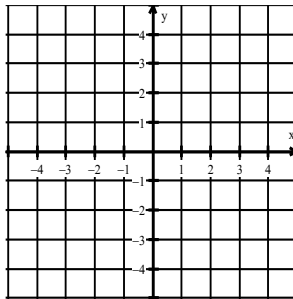
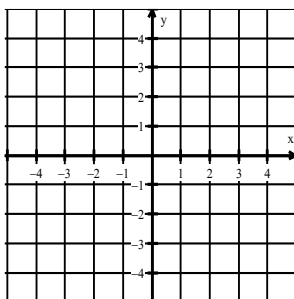


e) $f(x) = 3$

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

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

h) $f(x) = 3x$



2. Write a function g whose graph represents the given transformation of the graph of function $f(x) = |x|$.

a) Up 10

b) Reflect thru x-axis

c) Left 4 units

d) Right 5, Down 3

3. Write a function g whose graph represents the given transformation of the graph of function f .

a. Let $f(x) = (x-4)^2$ Translate 5 units up.b. Let $f(x) = |x| - 1$ Translate 3 units to the right.

4. Write a function g whose graph is a reflection in the x axis of the graph of $f: f(x) = (x+5)^2$

5. You sell candy bars for a club fundraiser. Your revenue is represented by $f(x) = x$. Your profit is \$8 less than the revenue for x candy bars. Write a new function describing your profit. What is your profit for 50 candy bars?

Warm-Up

Fill in the first 3 columns of the table from memory.

Warm-Up

Graph $f(x) = -|x-3|+1$