$y = k \cdot x^2$, where k is a negative number
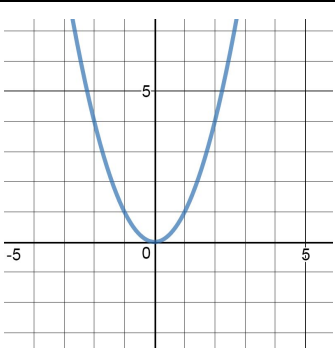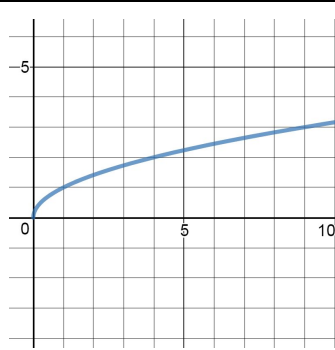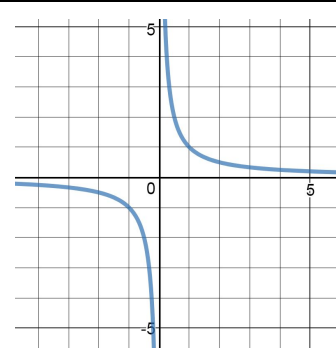
Reflect over x-axis

In this unit, you have been introduced to two new types of functions - the square root function and the inverse variation function. Each of these functions also has a parent graph:
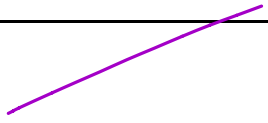
Square root function parent graph: $y = \sqrt{x}$ *Pg 35, 42, 44, 45*

Inverse variation function parent graph: $y = \frac{1}{x}$

Complete the table below to compare the key features of these three parent functions:

Feature	Quadratic	Square Root	Inverse Variation
Equation	$y = x^2$	$y = \sqrt{x}$	$y = \frac{1}{x}$
Graph			

Table of Key Points - mark these on the graphs above

x	y
-2	
-1	
0	
1	
2	

x	y
0	
1	
4	

x	y
-2	$-\frac{1}{2}$
-1	-1
-½	-2
½	2
1	1
2	$\frac{1}{2}$

|	$y = x^2$	$y = \sqrt{x}$	$y = y/x$
Domain	$(-\infty, \infty)$	$[0, \infty)$	$(-\infty, 0) \cup (0, \infty)$
Range	$[0, \infty)$	$[0, \infty)$	$(-\infty, 0) \cup (0, \infty)$
Description of Rate of Change	Steeper slope than $\longrightarrow$ So it's R.O.C is greater	Less steep slope than So the R.O.C. is less than	Fastest
Intercepts	x: $(0,0)$ y: $(0,0)$	x: $(0,0)$ y: $(0,0)$	N/A
Intervals Where Increasing or Decreasing	inc from $(0, \infty)$ Dec from $(-\infty, 0)$	inc from $(0, \infty)$	Dec: $(-\infty, 0) \cup (0, \infty)$
Maximum or Minimum	min @ $(0,0)$	N/A	
Symmetry	$x = 0$	N/A	$x = 0 / y = 0$
End Behavior	As $x \to \infty$ $y \to \infty$ As $x \to -\infty$, $y \to \infty$	As $x \to \infty$, $y \to \infty$	As $x \to \infty$ $y \to 0$ As $x \to -\infty$, $y \to 0$

SET

Topic: Graphing Transformations of Quadratic Functions.

Given the equation or description, graph the transformation of the parent quadratic function shown in each graph.
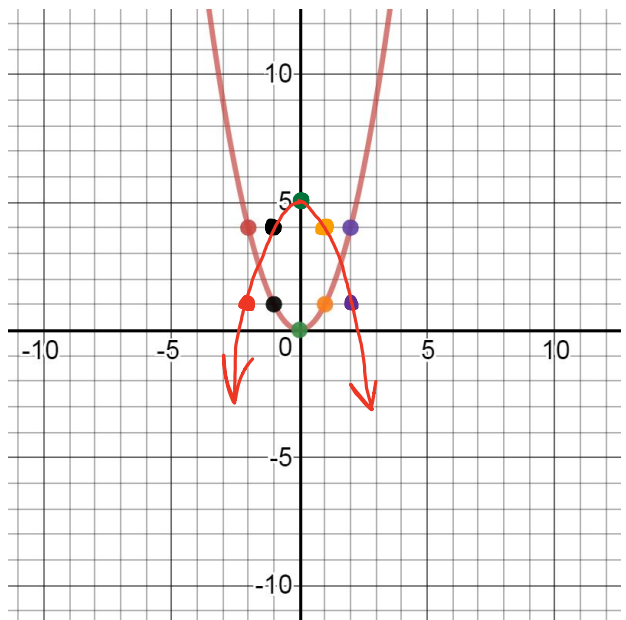
7. The graph has been stretched by a factor of three, shifted four units to the right, and two units down.

[handwritten: x^2]

[handwritten: $y = 3(x-4)^2 - 2$]
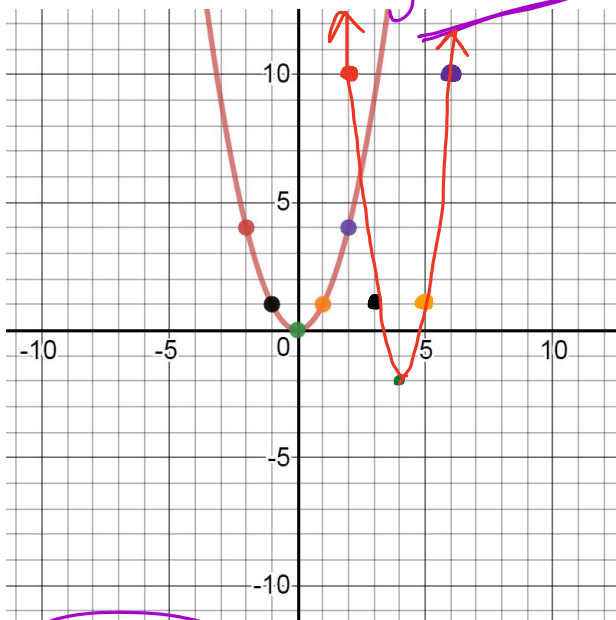
8. The graph has been reflected over the x-axis and shifted 5 units up.

[handwritten: $y = -(x)^2 + 5$]

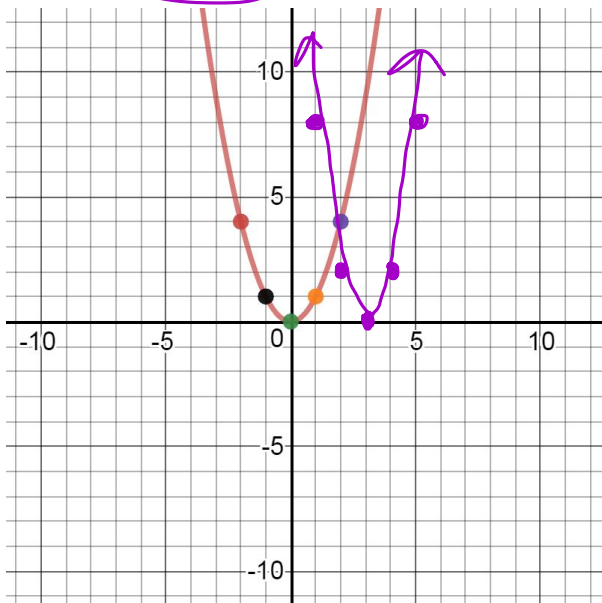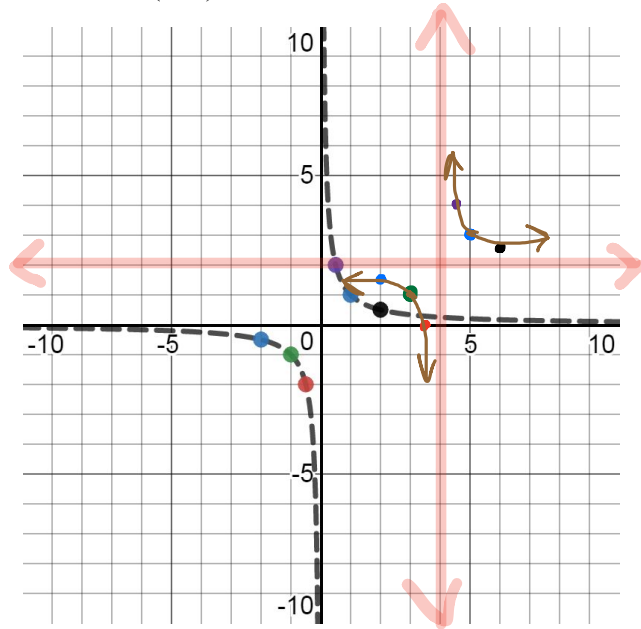9. $f(x) = 2(x-3)^2$ *[handwritten: in Desmos]*
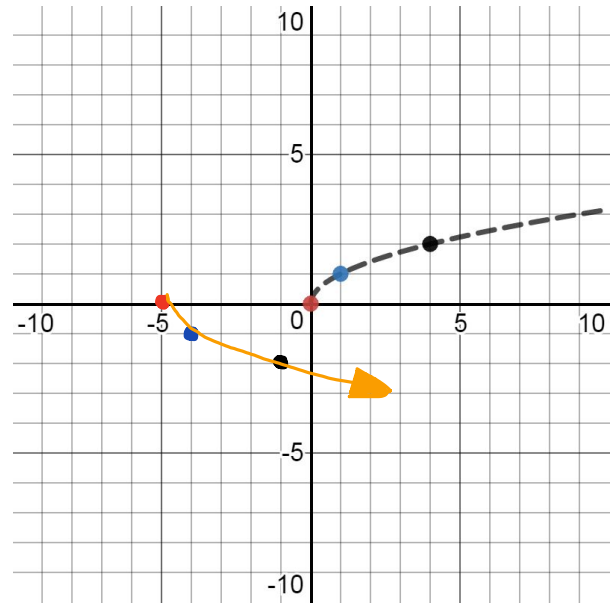
10. $f(x) = -0.5x^2 - 1$
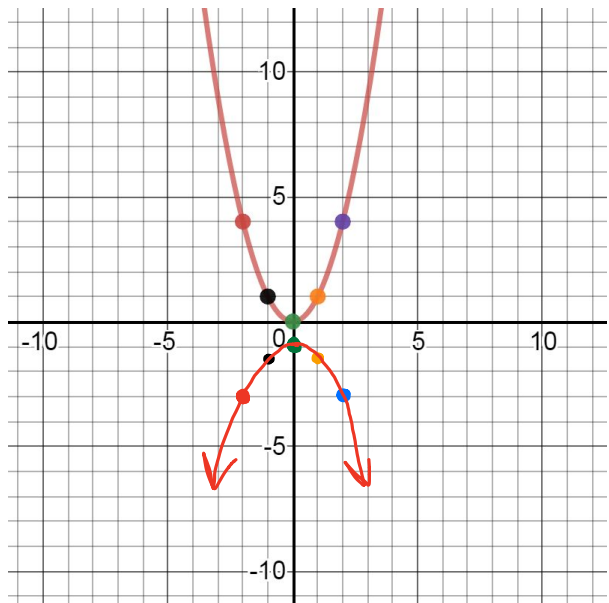
Graph the following transformations. Be sure to show the key points of the transformed function. The parent function with key points has been provided for you.
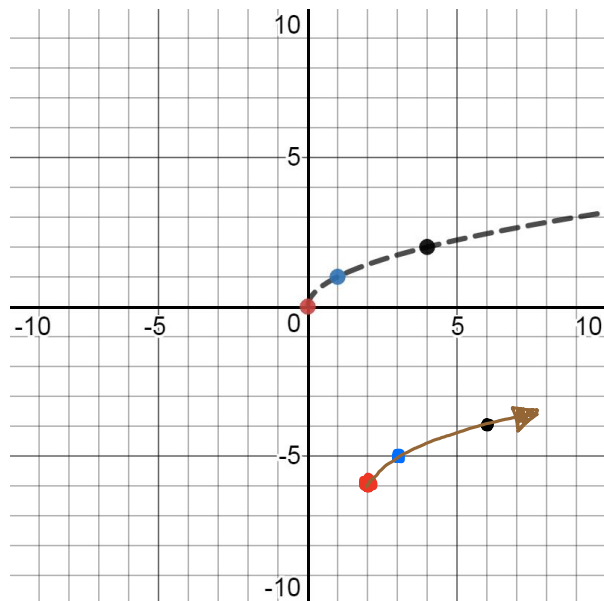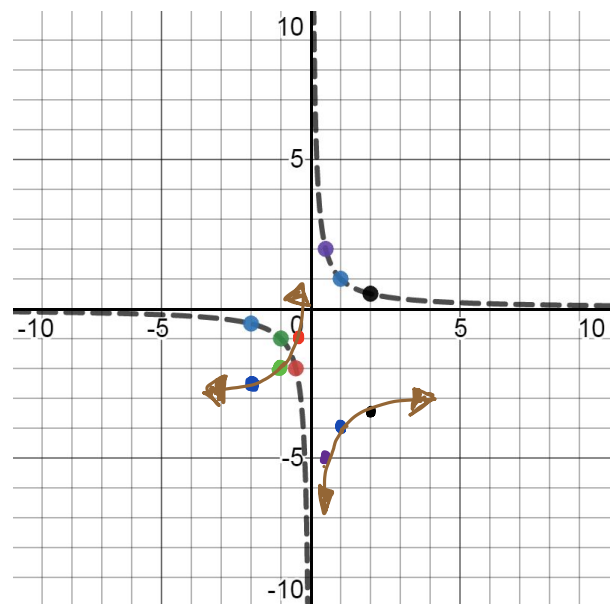
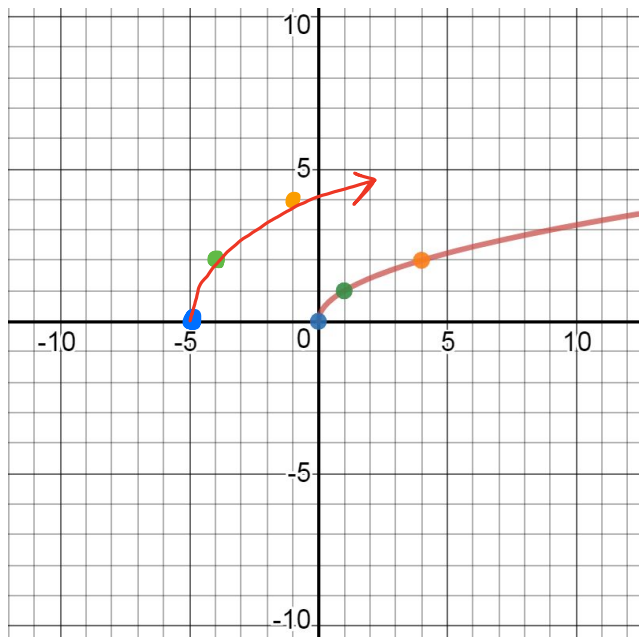1. $y = \dfrac{1}{(x-4)} + 2$

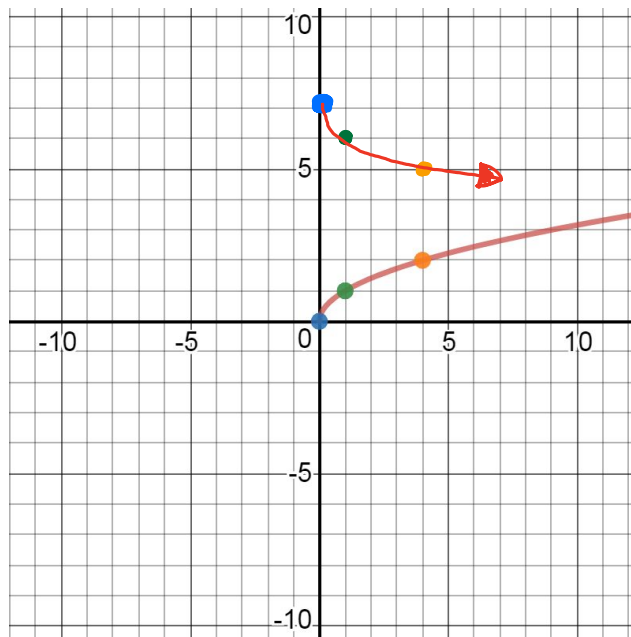2. $y = -\sqrt{x+5}$

3. $y = \sqrt{x-2} - 6$
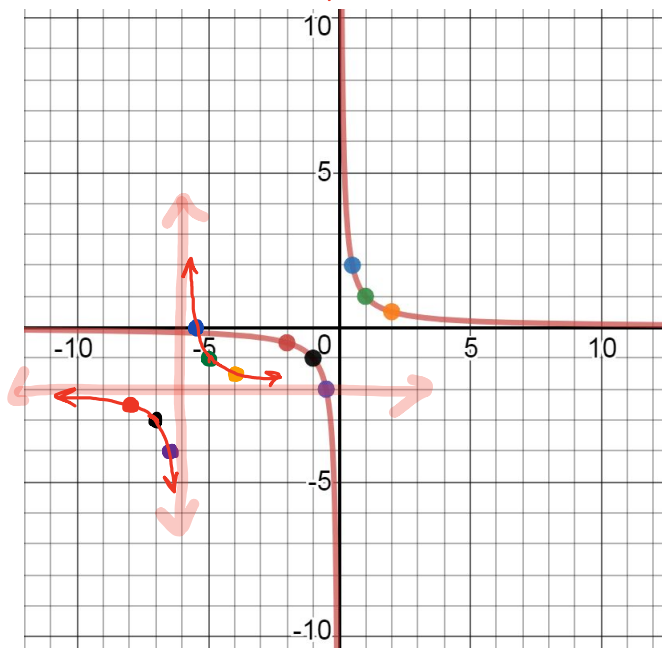
4. $y = -\dfrac{1}{x} - 3$

8. The graph has been stretched by a factor of 2, and shifted 5 units to the left. $y = 2\sqrt{x+5}$
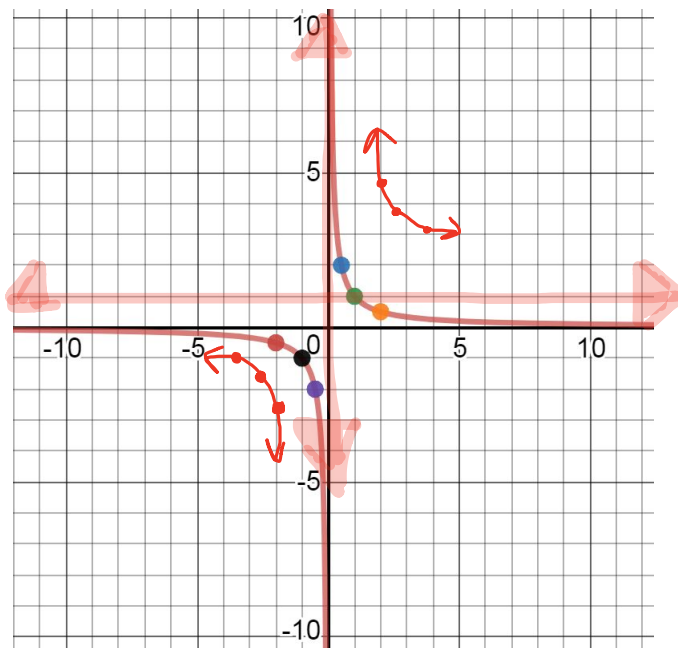
9. $f(x) = -\sqrt{x} + 7$

10. The graph has shifted six units left, and two units down. $y = \dfrac{1}{x+6} - 2$

$\sqrt{8} \approx 2.8$

11. $f(x) = \dfrac{8}{x} + 1$

GO!

Topic: Identify the type of function.

Each table is a model for a different type of function. Determine if each table is linear, exponential, quadratic, square root, or inverse variation.

12.

x	f(x)
0	0.25
1	0.50
2	1
3	2
4	4

x2 *exp*

13.

x	g(x)
1	5
5	1
10	$\frac{1}{2}$
15	$\frac{1}{3}$

inv var

14.

Quadratic

x	h(x)
0	-2
1	2
2	8
3	16
4	26

+4 >2
+6 >2
+8 +2
+10

15.

x	m(x)
16	5
9	4
4	3
1	2

Sq. Rt

16.

x	p(x)
-1	6
-2	10
-3	14
-4	18
-5	22

Linear +4

17.

x	v(x)
1	12
2	6
3	4
4	3

inv var