

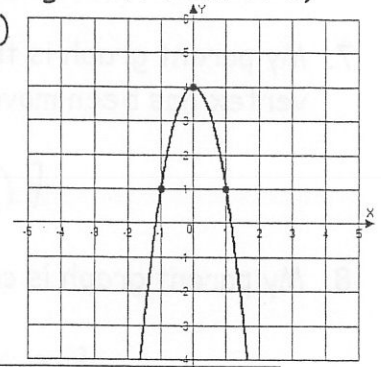
Instructions: For the following functions,

1. identify the parent function
2. describe each of the transformations to the parent function
3. sketch a graph of the function

Example:  $y = -3x^2 + 4$

1. The parent function is the quadratic,  $y = x^2$ .
2. Transformations: Reflected across the y-axis (indicated by negative in front)  
 Stretched by factor of 3 (indicated by the leading coefficient of 3)  
 Shifted 4 units upward (as indicated by the +4)

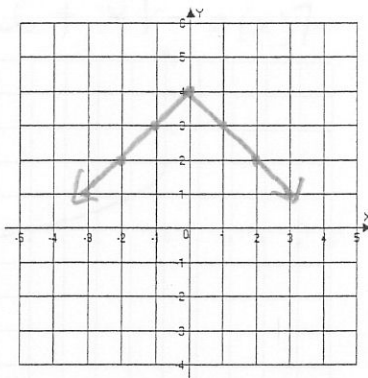
3. Graph----->



Your turn:

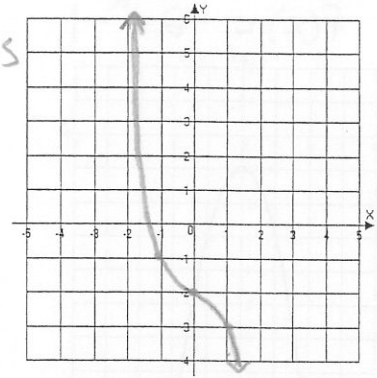
1.  $y = -|x| + 4$

- ①  $y = |x|$
- ② reflect across X-AXIS
- ③ shift 4 units up



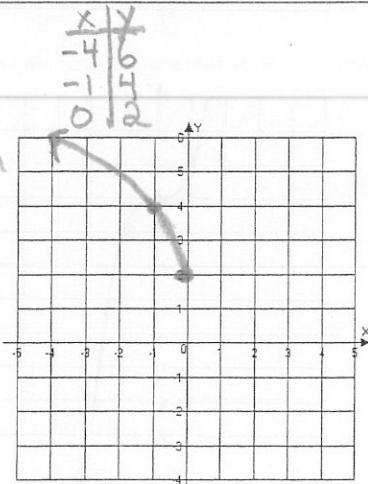
2.  $y = -x^3 - 2$

- ①  $y = x^3$
- ② reflect across X-AXIS
- ③ shift down 2 units



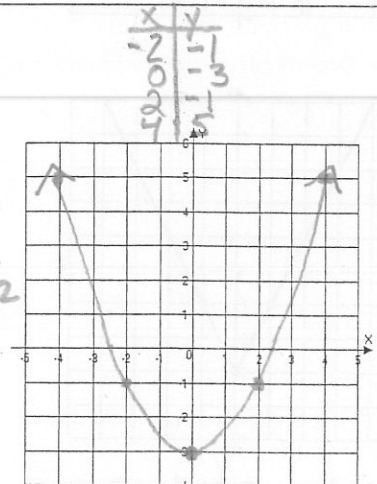
3.  $y = 2\sqrt{-x} + 2$

- ①  $y = \sqrt{x}$
- ② vertical stretch by a factor of 2
- ③ reflect across Y-AXIS
- ④ shift 2 units up



4.  $y = \frac{1}{2}x^2 - 3$

- ①  $y = x^2$
- ② vertical compression (shrink) by a factor of 1/2
- ③ shift down 3 units



For each of the problems below, use the clues to write a possible equation for the mystery function.

5. My parent graph is the square root function. I have been shrunk by a factor of  $\frac{1}{6}$ . I have been shifted up 3 units. What is my equation?

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

6. My parent graph is the absolute value function. I have been reflected across the x-axis. I have been stretched by a factor of 2. What is my equation?

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

7. My parent graph is the quadratic function. I have been reflected across the x-axis. My vertex has been moved 2 spaces upward. What is my equation?

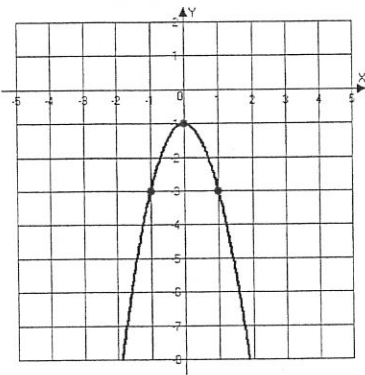
$$f(x) = -x^2 + 2$$

8. My parent graph is cubic. I have been moved 1 space down. What is my equation?

$$f(x) = x^3 - 1$$

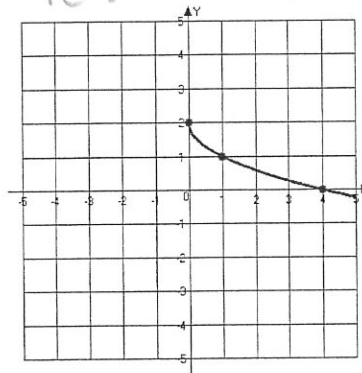
Based on your knowledge of graphing transformations, write a possible equation for the graph shown.

9.



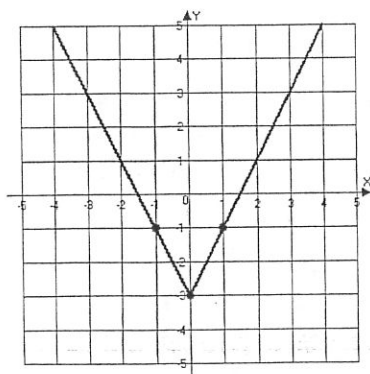
$$f(x) = -2x^2 - 1$$

10.



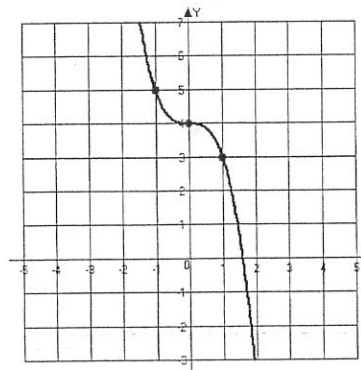
$$f(x) = -\sqrt{x} + 2$$

11.



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

12.



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