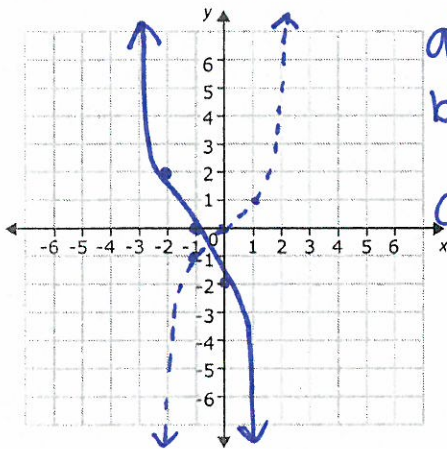


# Transformation of Functions

Key

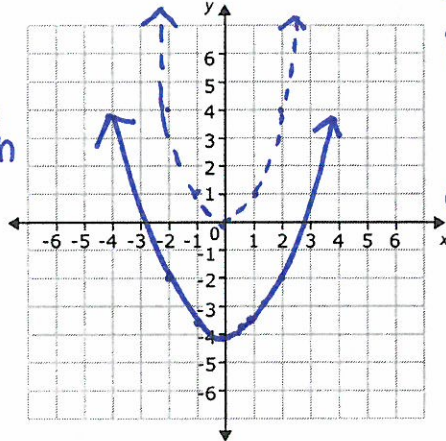
- Identify the Parent function
- Identify the transformation of the parent function (in words)
- Identify the domain and range of the new function
- Graph the parent function (using a dashed line) and the new function.

1.  $f(x) = -2(x + 1)^3$



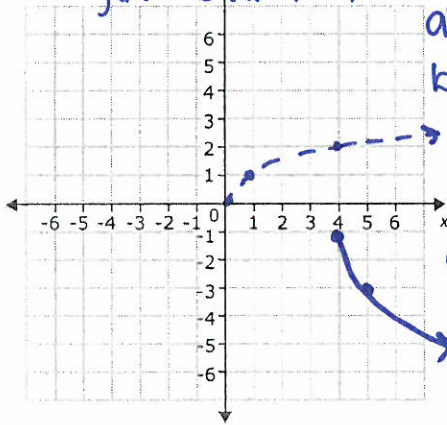
- a)  $x^3$ ; cubic  
 b) Refl. x-axis, Left + 1 vertical stretch by 2  
 c) D:  $(-\infty, \infty)$   
 R:  $(-\infty, \infty)$

4.  $j(x) = \frac{1}{2}x^2 - 4$



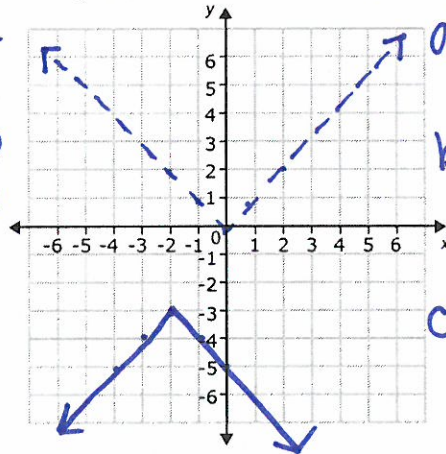
- a)  $x^2$ ; quadratic  
 b) vertical shrink by 2 Down 4  
 c) D:  $(-\infty, \infty)$   
 R:  $[-4, \infty)$

2.  $g(x) = -1 - 2\sqrt{x-4}$   
 $g(x) = -2\sqrt{x-4} - 1$



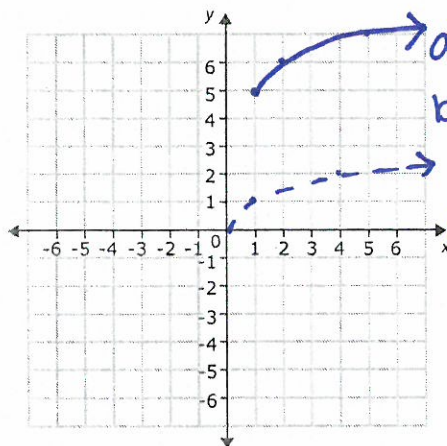
- a)  $\sqrt{x}$ ; square root  
 b) Refl. x-axis, vertical stretch by 2, Right 4, Down 1  
 c) D:  $[4, \infty)$   
 R:  $(-\infty, -1]$

5.  $f(x) = -|x + 2| - 3$



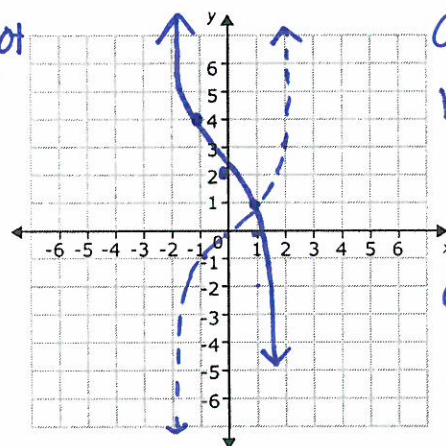
- a)  $|x|$ ; absolute value  
 b) Refl. over x-axis, left + 2, down 3  
 c) D:  $(-\infty, \infty)$   
 R:  $(-\infty, -3]$

3.  $k(x) = \sqrt{x-1} + 5$



- a)  $\sqrt{x}$ ; square root  
 b) Right 1 Up 5  
 c) D:  $[1, \infty)$   
 R:  $[5, \infty)$

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



- a)  $x^3$ ; cubic  
 b) vertical stretch by 2, Refl. over y-axis, up 2  
 c) D:  $(-\infty, \infty)$   
 R:  $(-\infty, \infty)$