

Identify the parent function, describe the transformations, state the domain and range, and describe the end behavior, then graph the function.

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

Parent Function:  $f(x) = x^3$

Transformations: flipped,  
left 2

Domain:  $(-\infty, \infty)$

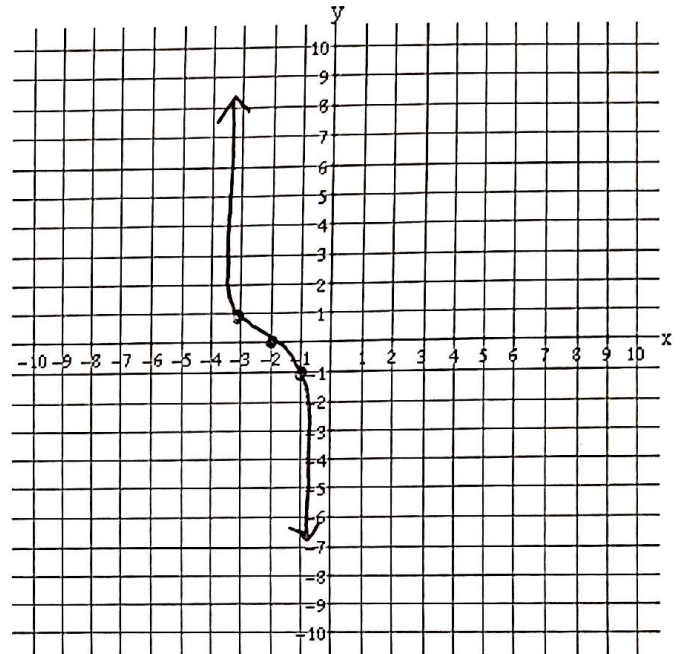
Range:  $(-\infty, \infty)$

Relative Extrema: none

Increasing Interval(s): none

Decreasing Interval(s):  $(-\infty, \infty)$

End Behavior:  $x \rightarrow \infty$   $f(x) \rightarrow -\infty$   
 $x \rightarrow -\infty$   $f(x) \rightarrow \infty$



2.  $f(x) = |x+4| - 6$

Parent Function:  $f(x) = |x|$

Transformations: left 4,  
down 6

Domain:  $(-\infty, \infty)$

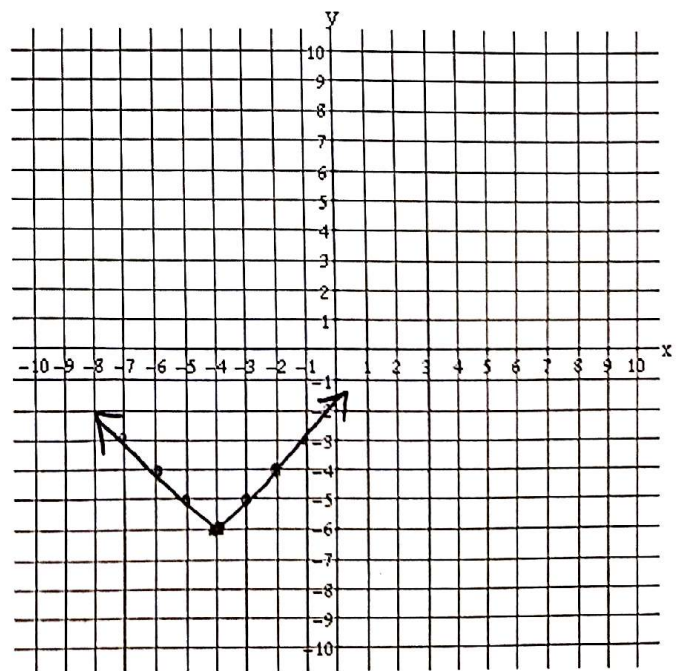
Range:  $[-6, \infty)$

Relative Extrema: min  $(-4, -6)$

Increasing Interval(s):  $(-4, \infty)$

Decreasing Interval(s):  $(-\infty, -4)$

End Behavior:  $x \rightarrow \infty$   $f(x) \rightarrow \infty$   
 $x \rightarrow -\infty$   $f(x) \rightarrow \infty$



3.  $f(x) = \frac{1}{2}(x-5)^3 + 2$

Parent Function:  $f(x) = x^3$

Transformations: stretch  $\frac{1}{2}$ ,  
right 5, up 2

Domain:  $(-\infty, \infty)$

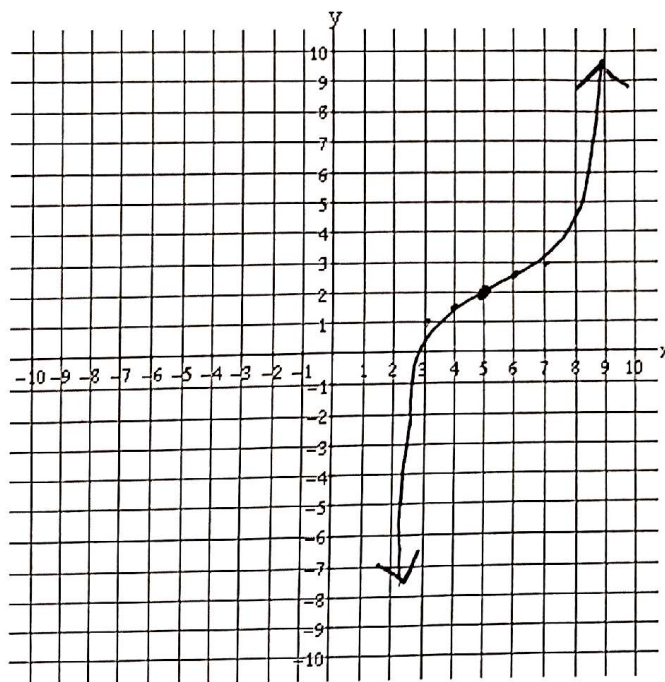
Range:  $(-\infty, \infty)$

Relative Extrema: none

Increasing Interval(s):  $(-\infty, \infty)$

Decreasing Interval(s): none

End Behavior:  $x \rightarrow \infty \quad f(x) \rightarrow \underline{\infty}$   
 $x \rightarrow -\infty \quad f(x) \rightarrow \underline{-\infty}$



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

Parent Function:  $f(x) = x^2$

Transformations: stretch 2,  
right 3

Domain:  $(-\infty, \infty)$

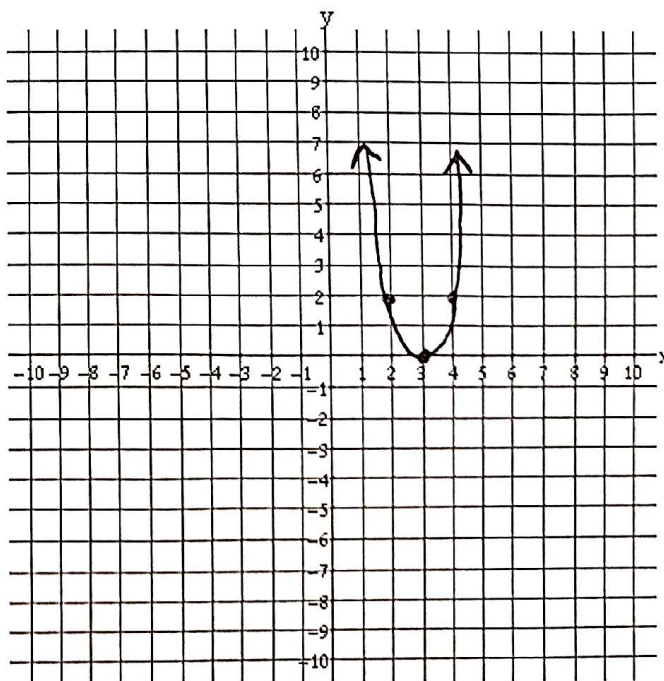
Range:  $(0, \infty)$

Relative Extrema: none

Increasing Interval(s):  $(3, \infty)$

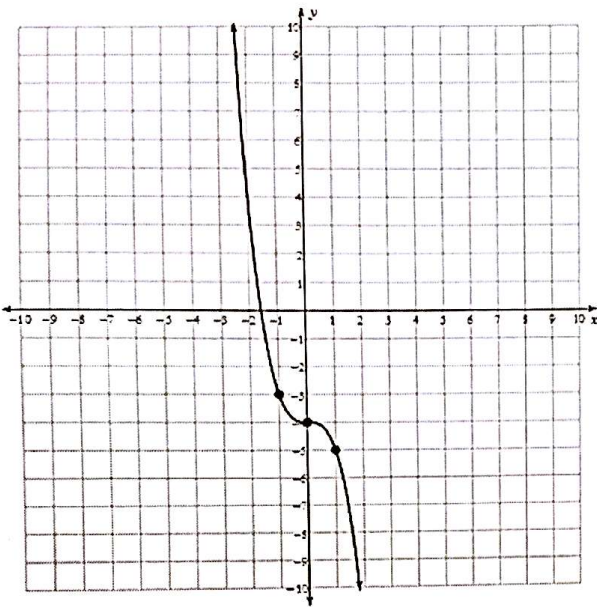
Decreasing Interval(s):  $(-\infty, 3)$

End Behavior:  $x \rightarrow \infty \quad f(x) \rightarrow \underline{\infty}$   
 $x \rightarrow -\infty \quad f(x) \rightarrow \underline{\infty}$



Name the parent function of each graph and then write the equation.

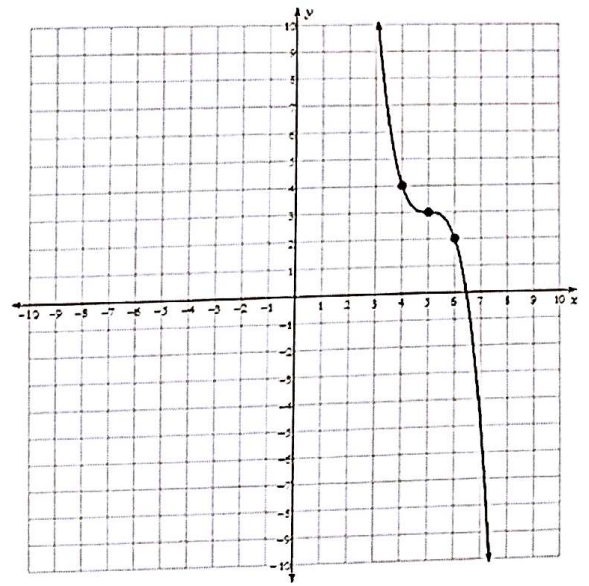
5.)



Parent Function:  $f(x) = x^3$

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

6.)

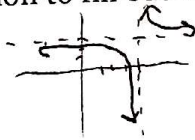


Parent Function:  $f(x) = x^3$

$g(x) = -(x-5)^3 + 3$

Use the equation of the function to fill out the key information.

7.)  $f(x) = \frac{1}{x-4} + 3$



Parent Function:  $f(x) = \frac{1}{x}$

Transformations: right 4, up 3

Domain:  $(-\infty, 4) \cup (4, \infty)$

Range:  $(-\infty, 3) \cup (3, \infty)$

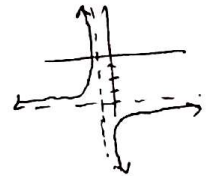
Relative Extrema: none

Increasing Interval(s): none

Decreasing Interval(s):  $(-\infty, 4) \cup (4, \infty)$

End Behavior:  $x \rightarrow \infty, f(x) \rightarrow \frac{3}{3}$

8.)  $\frac{-1}{x+1} - 4$



Parent Function:  $f(x) = \frac{1}{x}$

Transformations: flipped, left 1, down 4

Domain:  $(-\infty, -1) \cup (-1, \infty)$

Range:  $(-\infty, -4) \cup (-4, \infty)$

Relative Extrema: none

Increasing Interval(s):  $(-\infty, -1) \cup (-1, \infty)$

Decreasing Interval(s): none

End Behavior:  $x \rightarrow \infty, f(x) \rightarrow \frac{-4}{-4}$