

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

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

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

Transformations: flipped, right 2

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

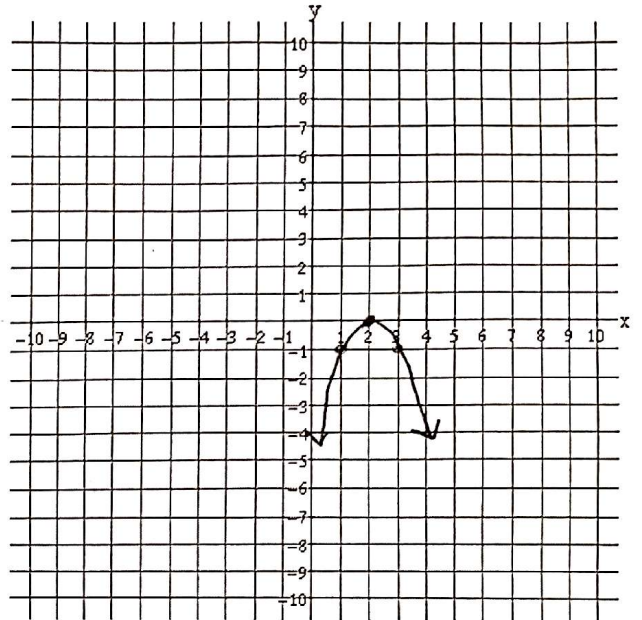
Range: $(-\infty, 0]$

Relative Extrema: ~~none~~ max (2, 0)

Increasing Interval(s): $(-\infty, 2)$

Decreasing Interval(s): $(2, \infty)$

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



2. $f(x) = 3\sqrt{x-1} - 3$

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

Transformations: stretch 3,
right 1, down 3

Domain: $[1, \infty)$

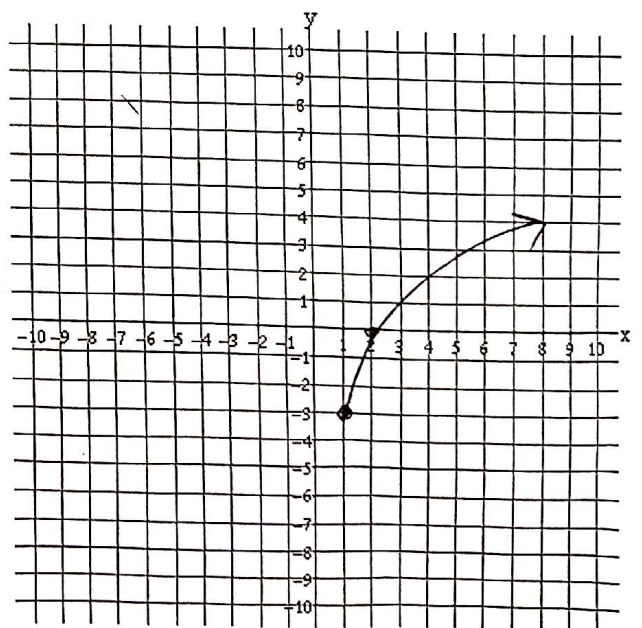
Range: $[-3, \infty)$

Relative Extrema: none

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

Decreasing Interval(s): none

End Behavior: $x \rightarrow \infty \quad f(x) \rightarrow \infty$
 $x \rightarrow -\infty \quad f(x) \rightarrow \text{none}$



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

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

Transformations: Stretch $\frac{1}{2}$,
left 3, up 1

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

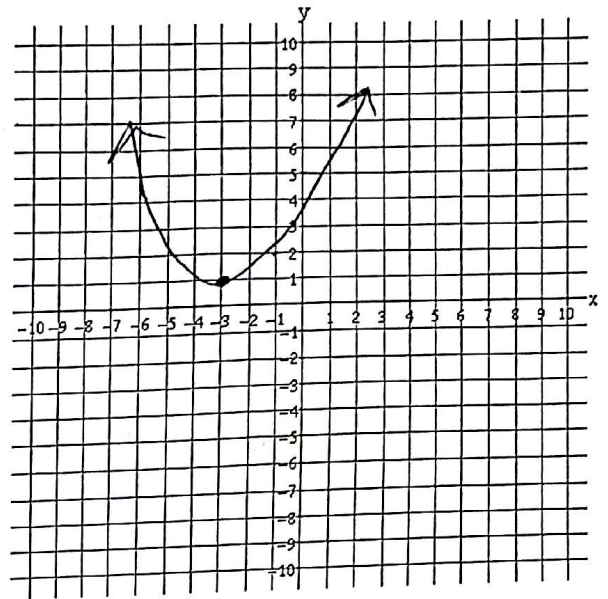
Range: $[1, \infty)$

Relative Extrema: min (-3, 1)

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

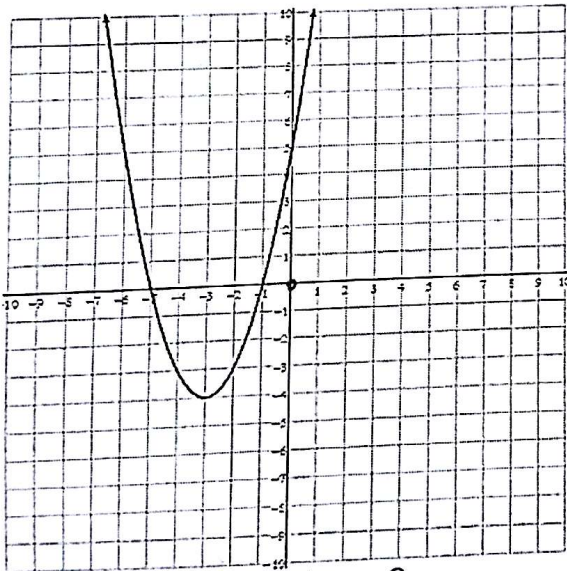
Decreasing Interval(s): $(-\infty, -3)$

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



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

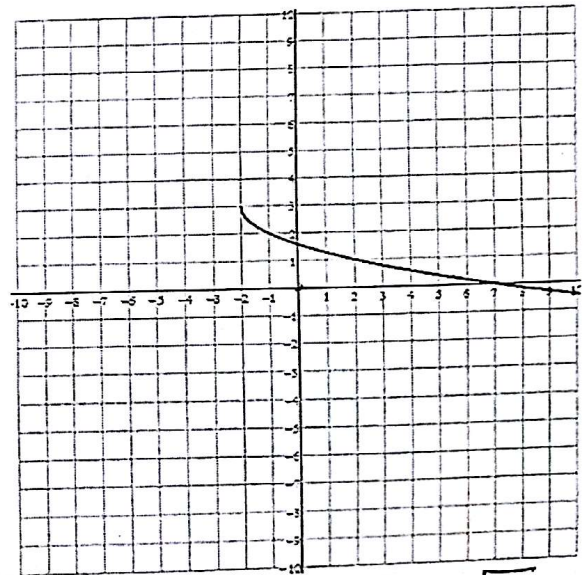
4.



quadratic: $f(x) = x^2$

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

5.



Parent Function:

Parent Function: square root: $f(x) = \sqrt{x}$

$g(x) = -\sqrt{x+2} + 3$