College Algebra
Unit 3 LT 2 Day 2 Practice

Name: Key

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: quadratic

Transformations: → 2

flipped

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

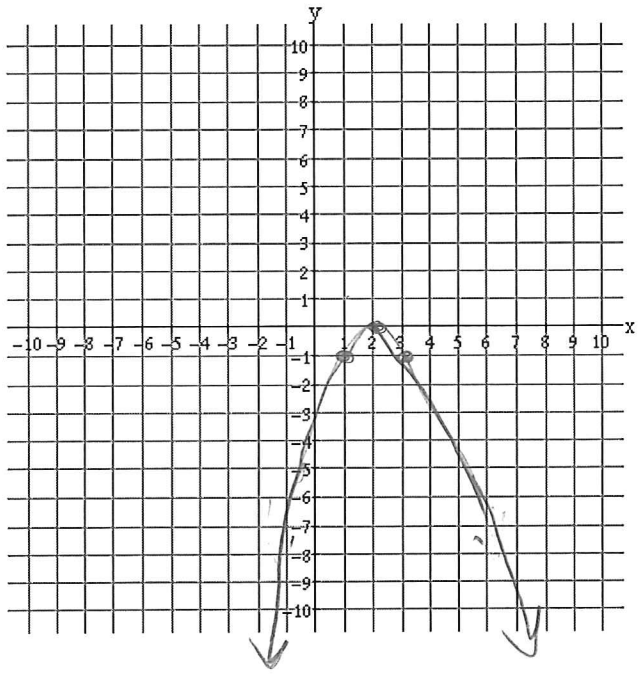
Range: $(-\infty, 0]$

Relative Extrema: max: (2, 0)

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

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

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



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

Parent Function: square root

Transformations: stretched by factor of 3

→ 1 ↓ 3

Domain: $[1, \infty)$

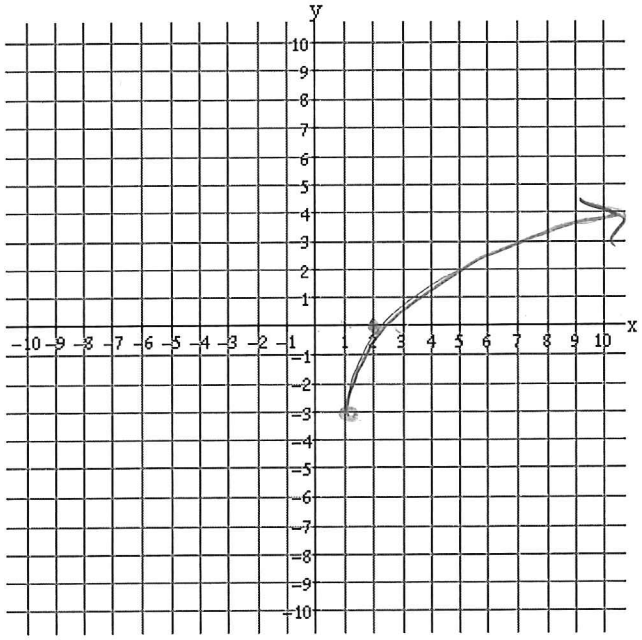
Range: $[-3, \infty)$

Relative Extrema: none

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

Decreasing Interval(s): none

End Behavior: $x \to \infty$ $f(x) \to \infty$
$x \to -\infty$ $f(x) \to 1$



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

Parent Function: quadratic

Transformations: stretched 1/2

← 3 ↑ 1

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

Range: $(1, \infty)$

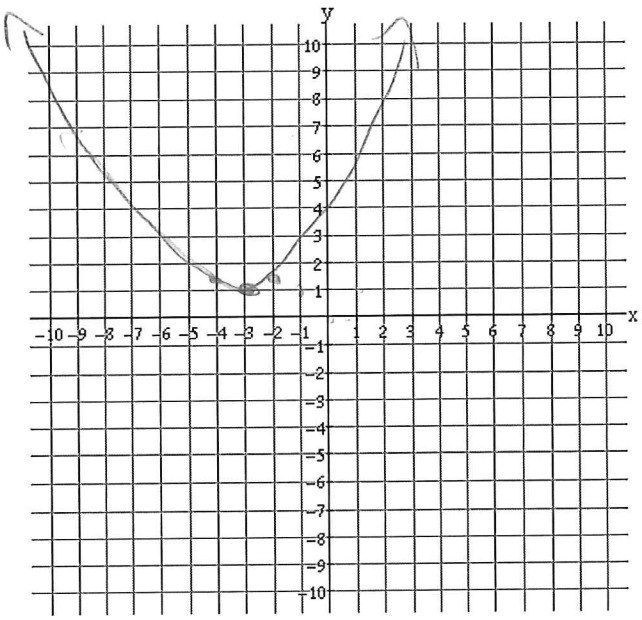
Relative Extrema: min $(-3, 1)$

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

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

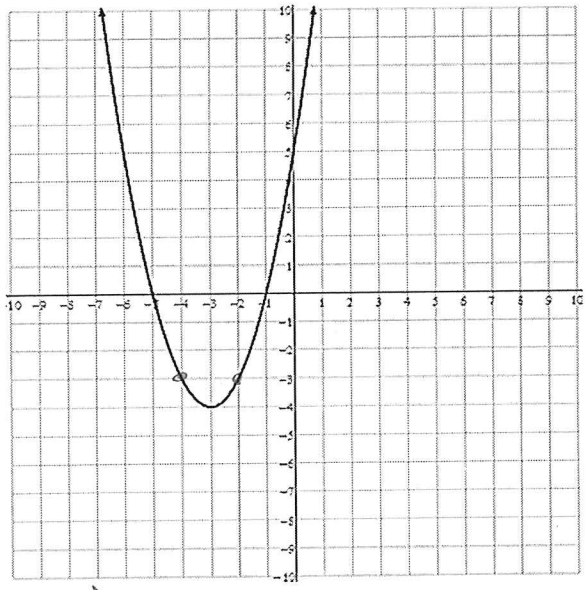
End Behavior: $x \to \infty$ $f(x) \to \infty$

$x \to -\infty$ $f(x) \to \infty$



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

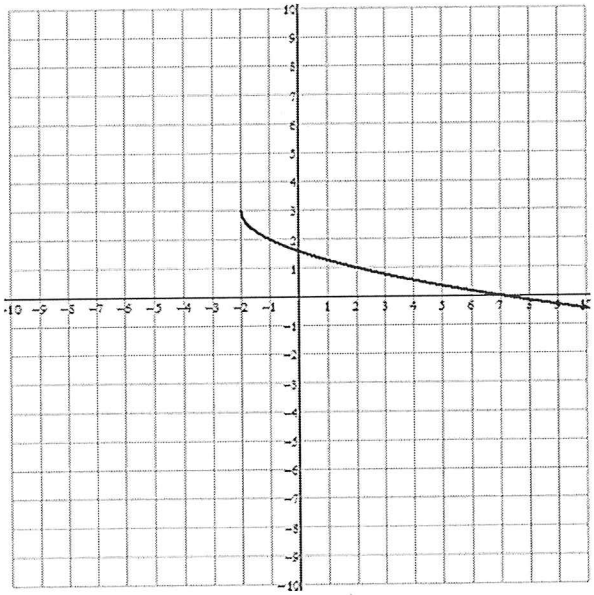
4.



quadratic

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

5.



Parent Function: square root

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