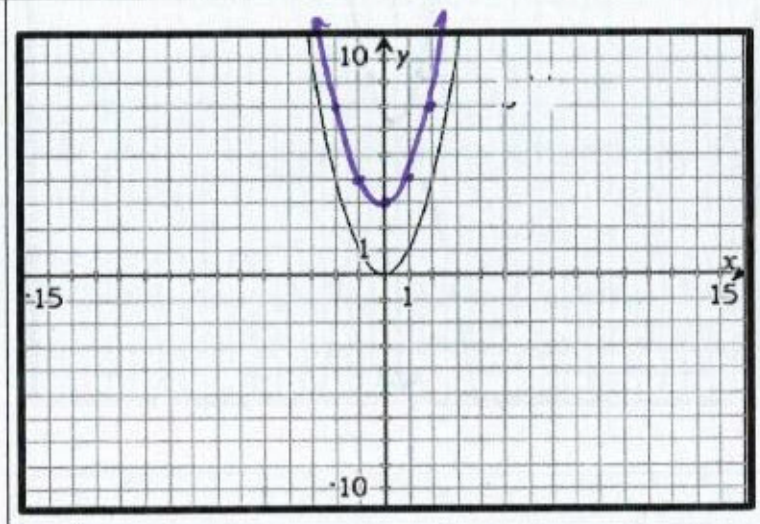
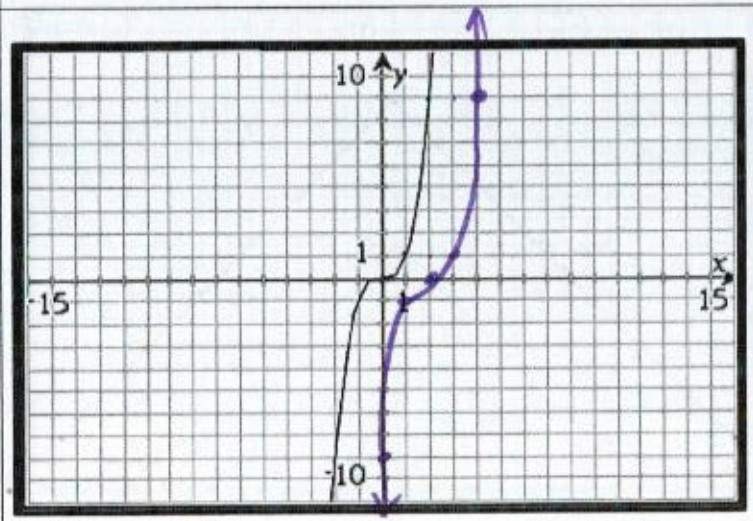
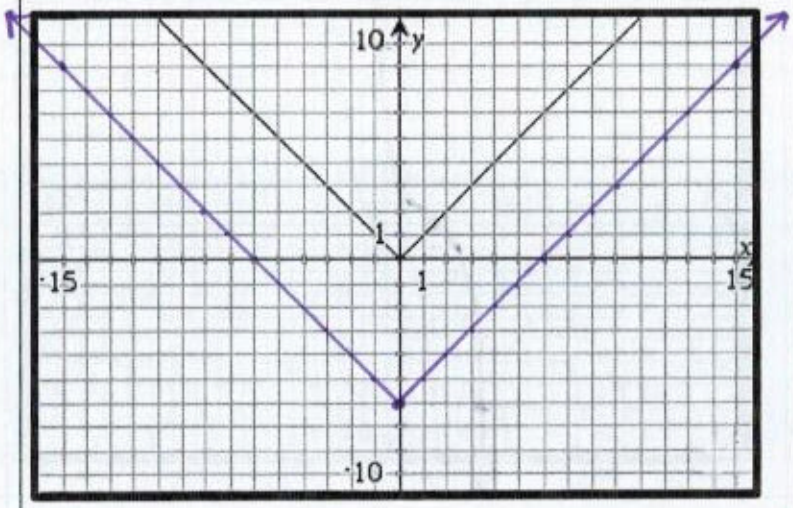
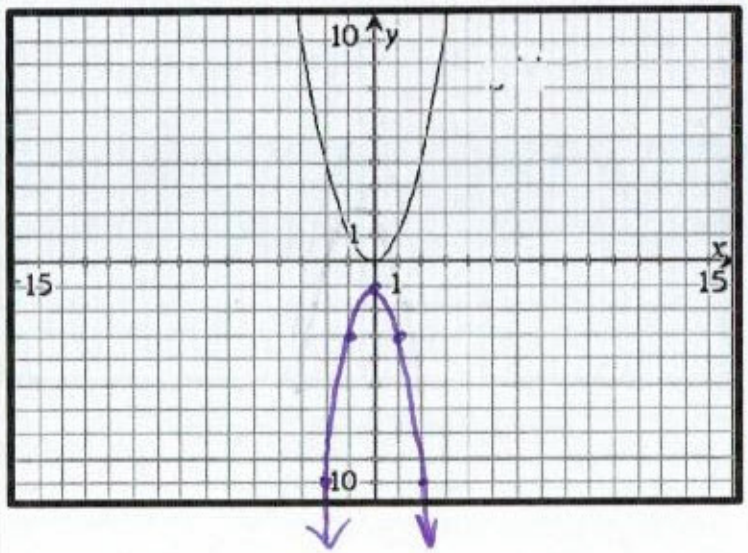
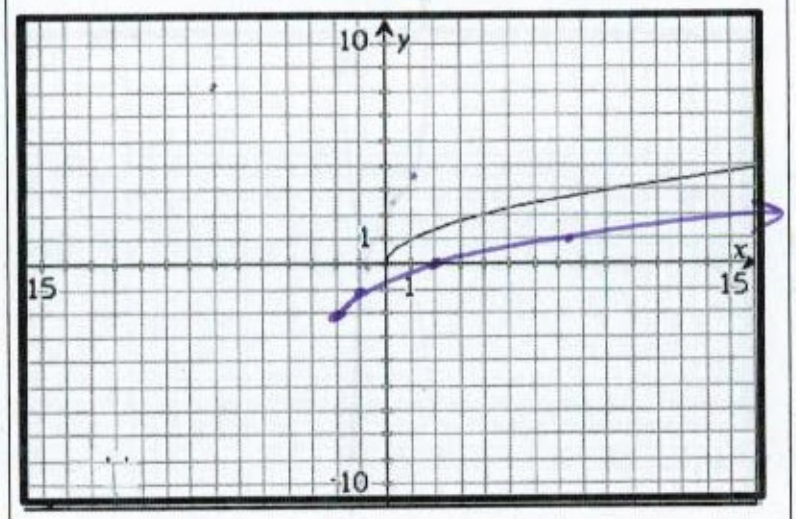
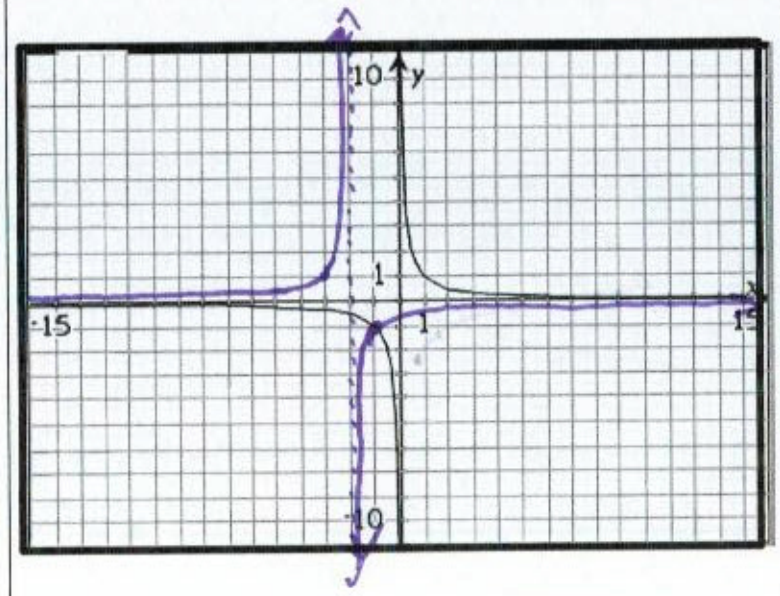
PRECALCULUS

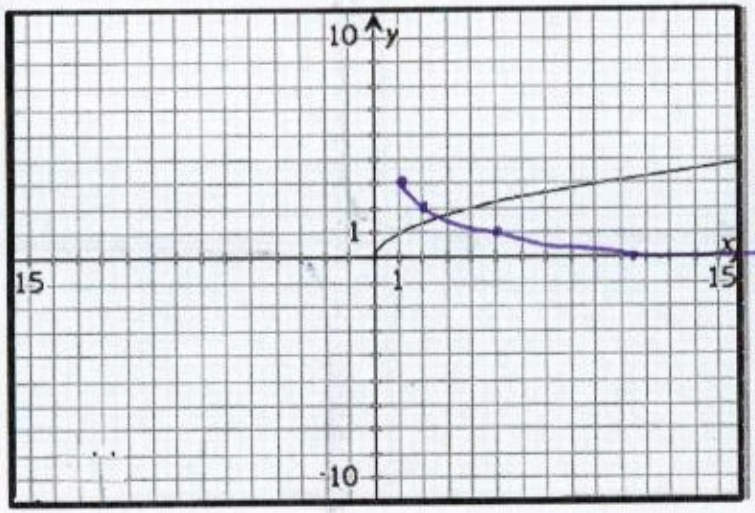
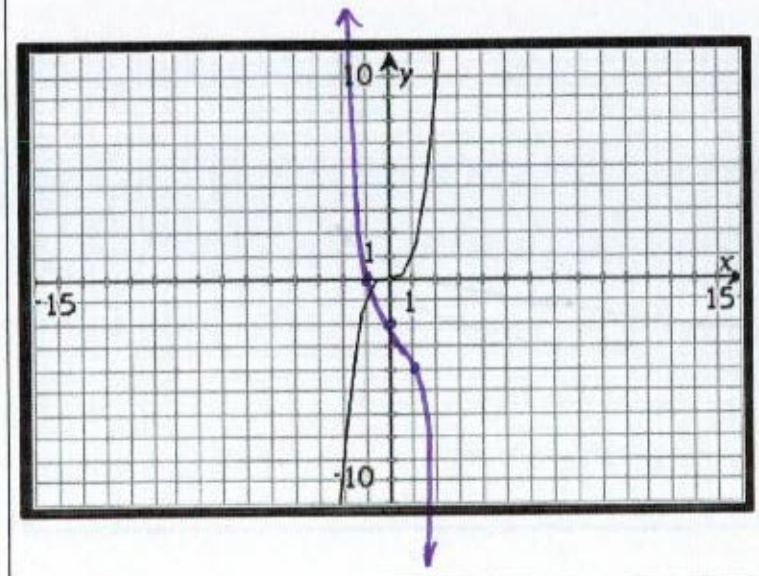
Name: Key Period: _____

Transformations Day 1

Parent Function	Transformed Function	Graph the Transformed Function	Describe the Transformation	Identify the following:
$f(x) = x^2$	$g(x) = x^2 + 3$		↑3	Domain (x): $(-\infty, \infty)$ Range (y): $[3, \infty)$ Intervals: Increasing: $(0, \infty)$ Decreasing: $(-\infty, 0)$ Constant: — Local Max NONE Local Min $y = 3$ Continuous: (Y) or N Type: (Even)/Odd/Neither Upper Bound: NONE Lower Bound: $y = 3$ V.A. } NONE H.A. } End Behavior: $ASX \to \infty, f(x) \to \infty$ / $ASX \to -\infty$, $f(x) \to \infty$
$f(x) = (x)^3$	$g(x) = (x-2)^3$		→2	Domain (x): $(-\infty, \infty)$ Range (y): $(-\infty, \infty)$ Intervals: Increasing: $(-\infty, \infty)$ Decreasing: — Constant: — Local Max } NONE Local Min } Continuous: (Y) or N Type: Even/Odd/Neither Upper Bound: } NONE Lower Bound: } V.A. } NONE H.A. } End Behavior: $ASX \to -\infty$, $f(x) \to -\infty$ / $ASX \to \infty$, $f(x) \to \infty$

Parent Function	Transformed Function	Graph the Transformed Function	Describe the Transformation	Identify the following:
$f(x) = \|x\|$	$g(x) = \|x\| - 6$		↓ 6	Domain (x): $(-\infty, \infty)$ Range (y): $[-6, \infty)$ Intervals: Increasing: $(0, \infty)$ Decreasing: $(-\infty, 0)$ Constant: — Local Max NONE Local Min $y = -6$ Continuous: (Y) or N Type: Even/Odd/Neither Upper Bound: NONE Lower Bound: $y = -6$ V.A. NONE H.A. NONE End Behavior: As $x \to -\infty$ / As $x \to \infty$ $f(x) \to \infty$ / $f(x) \to \infty$
$f(x) = x^2$	$g(x) = -2x^2 - 1$		VERTICAL REFLECTION (OR: REFLECTION OVER X-AXIS) ↓ 1 VERTICAL STRETCH BY A FACTOR OF 2	Domain (x): $(-\infty, \infty)$ Range (y): $(-\infty, -1]$ Intervals: Increasing: $(-\infty, 0)$ Decreasing: $(0, \infty)$ Constant: — Local Max $y = -1$ Local Min NONE Continuous: (Y) or N Type: (Even)/Odd/Neither Upper Bound: $y = -1$ Lower Bound: NONE V.A. NONE H.A. NONE End Behavior: As $x \to -\infty$ / As $x \to \infty$ $f(x) \to -\infty$ / $f(x) \to -\infty$

Parent Function	Transformed Function	Graph the Transformed Function	Describe the Transformation	Identify the following:
$f(x) = \sqrt{x}$	$g(x) = \sqrt{x+2} - 2$		← 2 ↓ 2	Domain (x): $[-2, \infty)$ Range (y): $[-2, \infty)$ Intervals: Increasing: $[-2, \infty)$ Decreasing: — Constant: — Local Max NONE Local Min $y = -2$ Continuous: Y or N Type: Even/Odd/Neither Upper Bound: NONE Lower Bound: $y = -2$ V.A. NONE H.A. NONE End Behavior: As $x \to 0^+$, $f(x) \to -2$ / As $x \to \infty$, $f(x) \to \infty$
$f(x) = \frac{1}{x}$	$g(x) = -\frac{1}{(x+2)}$		VERTICAL REFLECTION (OR: REFLECTION OVER X-AXIS) ← 2	Domain (x): $(-\infty, -2) \cup (-2, \infty)$ Range (y): $(-\infty, 0) \cup (0, \infty)$ Intervals: Increasing: $(-\infty, -2) \cup (-2, \infty)$ Decreasing: — Constant: — Local Max NONE Local Min NONE Continuous: Y or N Type: Even/Odd/Neither Upper Bound: NONE Lower Bound: NONE V.A. $x = -2$ H.A. $y = 0$ End Behavior: As $x \to -2^-$, $f(x) \to 0$ / As $x \to -\infty$, $f(x) \to 0$ As $x \to -2^+$, $f(x) \to 0$ / As $x \to \infty$, $f(x) \to 0$

Parent Function	Transformed Function	Graph the Transformed Function	Describe the Transformation	Identify the following:
$f(x) = \sqrt{x}$	$g(x) = -\sqrt{x-1}+3$		VERTICAL REFLECTION (REFLECTION OVER THE X-AXIS) → 1 ↑ 3	Domain (x): $[1,\infty)$ Range (y): $[-\infty, 3]$ Intervals: Increasing: — Decreasing: $[1,\infty)$ Constant: — Local Max $y=3$ Local Min NONE Continuous: Y or N Type: Even/Odd/Neither Upper Bound: $y=3$ Lower Bound: NONE V.A. / H.A. NONE End Behavior: As $x \to 1^+$, $f(x) \to 3$ / As $x \to \infty$, $f(x) \to -\infty$
$f(x) = x^3$	$g(x) = (-0.5x)^3 - 2$		HORIZONTAL REFLECTION (REFLECTION OVER y-AXIS) HORIZONTAL STRETCH BY A FACTOR OF 2 ↓ 2	Domain (x): $(-\infty,\infty)$ Range (y): $(-\infty,\infty)$ Intervals: Increasing: $(-\infty,\infty)$ Decreasing: — Constant: — Local Max / Local Min NONE Continuous: Y or N Type: Even/Odd/Neither Upper Bound: / Lower Bound: NONE V.A. / H.A. NONE End Behavior: As $x \to -\infty$, $f(x) \to \infty$ / As $x \to \infty$, $f(x) \to -\infty$