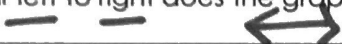



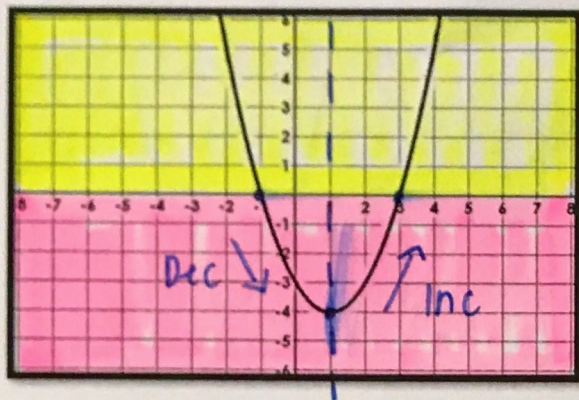
$x - 1 = 0$

$x = 1$

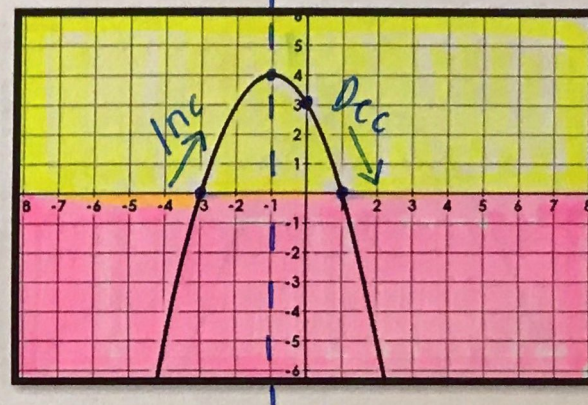
Characteristics of Quadratics

Characteristic	Define:	Think:	Write:
Domain	All possible values of x	How far <u>left</u> to <u>right</u> does the graph go? 	Smallest $x \leq x \leq$ Biggest x *use $<$ if the circles are open*
Range	All possible values of y	How far <u>down</u> to how far <u>up</u> does the graph go? 	$y \leq$ highest y value (opens down) $y \geq$ lowest y value (opens up)
<u>Y-Intercept</u>	Point where the graph crosses the y -axis <i>where $x = 0$</i>	At what coordinate <u>point</u> does the graph cross the y -axis?	$(0, b)$
<u>X-Intercept</u>	Point where the graph crosses the x -axis <i>where $y = 0$</i>	At what coordinate <u>point</u> does the graph cross the x -axis?	$(a, 0)$
Zero	Where the function (y -value) equals 0	At what x -value does the graph cross the x -axis?	$x = \underline{\quad}$
Vertex	Highest or lowest point or peak of a parabola	What is my highest or lowest point on my graph?	Name the point (h, k)
Axis of Symmetry	The vertical line that divides the parabola into mirror images and runs through the vertex	What imaginary, vertical line would make the parabola symmetrical?	$x = h$ (x value of the vertex)
Maximum	Highest point or peak of a function.	What is my highest point on my graph?	$y = k$ (y -value of the vertex)
Minimum	Lowest point or valley of a function.	What is the lowest point on my graph?	$y = k$ (y -value of the vertex)
Extrema	The Maximum or Minimum of a function.	Does the graph have a maximum or minimum?	Max or Min? <u> </u> <u> </u>
End Behavior	Behavior of the ends of the function (what happens to the y -values or $f(x)$) as x approaches positive or negative infinity. The arrows indicate the function goes on forever so we want to know where those ends go.	As x goes to the left (negative infinity), what direction does the left arrow go? As x goes to the right (positive infinity), what direction does the right arrow go?	As $x \rightarrow -\infty, f(x) \rightarrow \underline{\quad}$ <i>Y</i> As $x \rightarrow \infty, f(x) \rightarrow \underline{\quad}$ <i>Y</i>
Intervals of Increase	The part of the graph that is rising as you read left to right.	From <u> </u> to <u> </u> , is my graph going up?	An inequality using the x -value of the vertex <u> </u>
Intervals of Decrease	The part of the graph that is falling as you read from left to right.	From <u> </u> to <u> </u> , is my graph going down?	An inequality using the x -value of the vertex <u> </u>
Positive	The part of the function that is above the x -axis.	Which part of the function is in the positive region and where?	Inequality using the zeros value (x)
Negative	The part of the function that is below the x -axis.	Which part of the function is in the negative region and where?	Inequality using the zero values (x)

Graph 1



Graph 2



Domain: all real #'s

Range: $y \geq -4$

Y-Intercept: (0, -3)

Zeroes: $x = -1$ $x = 3$

Vertex: (1, -4)

Axis of Sym. $x = 1$

Max/Min Value: $y = -4$

Extrema: MIN.

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

Int of Inc: $x > 1$

Int of Dec: $x < 1$

Positive: _____

Negative: _____

Domain: all real #'s

Range: $y \leq 4$

Y-Intercept: (0, 3)

Zeroes: $x = -3$ $x = 1$

Vertex: (-1, 4)

Axis of Sym. $x = -1$

Max/Min Value: $y = 4$

Extrema: MAX.

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

Int of Inc: $x < -1$

Int of Dec: $x > -1$

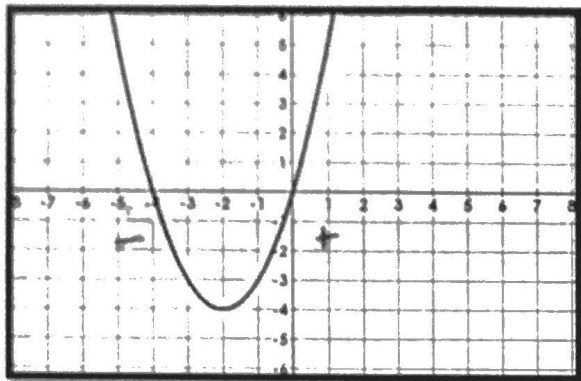
Positive: _____

Negative: _____

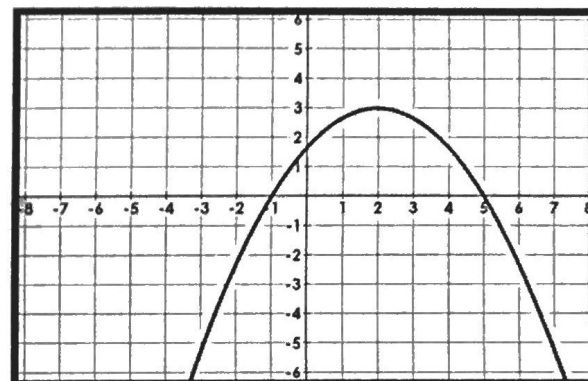
when $x=0$

when $x=0$

Graph 3



Graph 4

Domain: all real #'sRange: $y \geq -4$ Y-Intercept: (0, 0)Zeroes: $x = -4$ $x = 0$ Vertex: (-2, -4)Axis of Sym. $x = -2$ Max/Min Value: MIN @ $y = -4$ Extrema: MINEnd Behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow \infty$. As $x \rightarrow \infty$, $f(x) \rightarrow \infty$ Int of Inc: $x > -2$ Int of Dec: $x < -2$

Positive: _____ Negative: _____

Domain: all real #'sRange: $y \leq 3$ Y-Intercept: (0, 1.75)Zeroes: $x = -1$ $x = 5$ Vertex: (2, 3)Axis of Sym. $x = 2$ Max/Min Value: MAX @ $y = 3$ Extrema: MAXEnd Behavior: As $x \rightarrow -\infty$, $f(x) \rightarrow -\infty$. As $x \rightarrow \infty$, $f(x) \rightarrow -\infty$ Int of Inc: $x < 2$ Int of Dec: $x > 2$

Positive: _____ Negative: _____