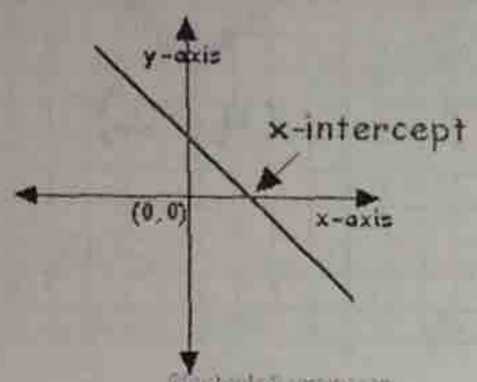
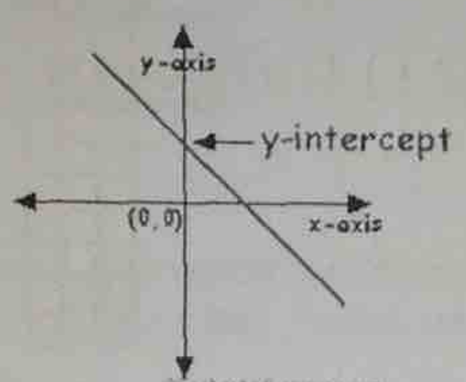
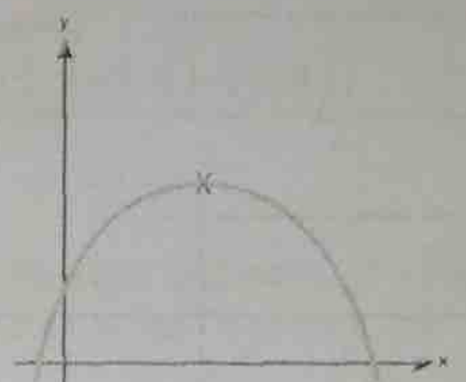
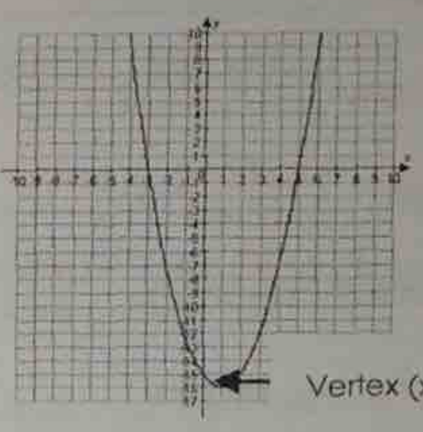
Activity 2.1: Parts of a Graph

Name: Key!

Math 3

X-Intercept:	Y-Intercept:	Maximum/Minimum:	Vertex:
When the value of "y" is zero; where the graph crosses the x-axis.	When the value of "x" is zero; where the graph crosses the y-axis.	The y-value where a graph comes to a high point or low point	Highest or lowest point of a graph (x, y)
			

Directions: In the following activity, fill in the table, plot the points on the graph, and find the maximum or minimum, vertex, x-intercepts, and y-intercepts. Then state the shape and answer the question at the end of each category.

Example: $f(x) = (x+1)^2 - 9$ Shape: U

x	-6	-5	-4	-3	-2	-1 (vertex)	0
y	16	7	0	-5	-8	-9	-8

x-intercept: (-4, 0) & (2, 0)

y-intercept: (0, -8)

Max or Min: minimum

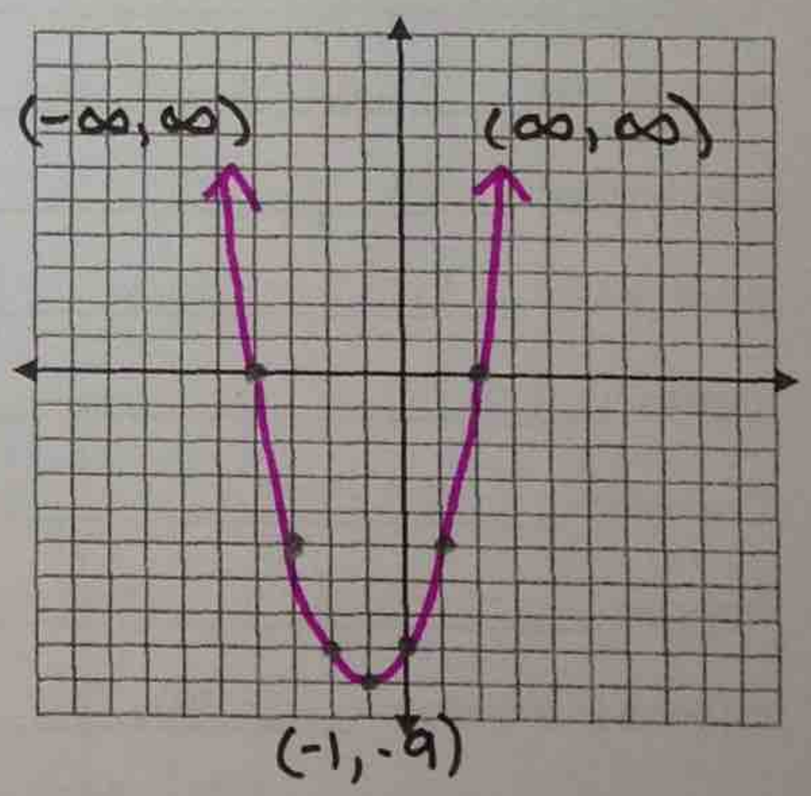
Vertex: (-1, -9)

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

Range: $[-9, \infty)$

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

Interval Decreasing: $(-\infty, -1)$



- What similarities do you see between the vertex and the equation?
- What part of the equation do you think gives the graph its shape?

Absolute Value #1: $f(x) = |x - 4| - 2$ Shape: ✓

vertex

x	1	2	3	4	5	6	7
y	1	0	-1	-2	-1	0	1

x-intercept: (2,0) & (6,0)

y-intercept: (0, 2)

Max or Min: minimum

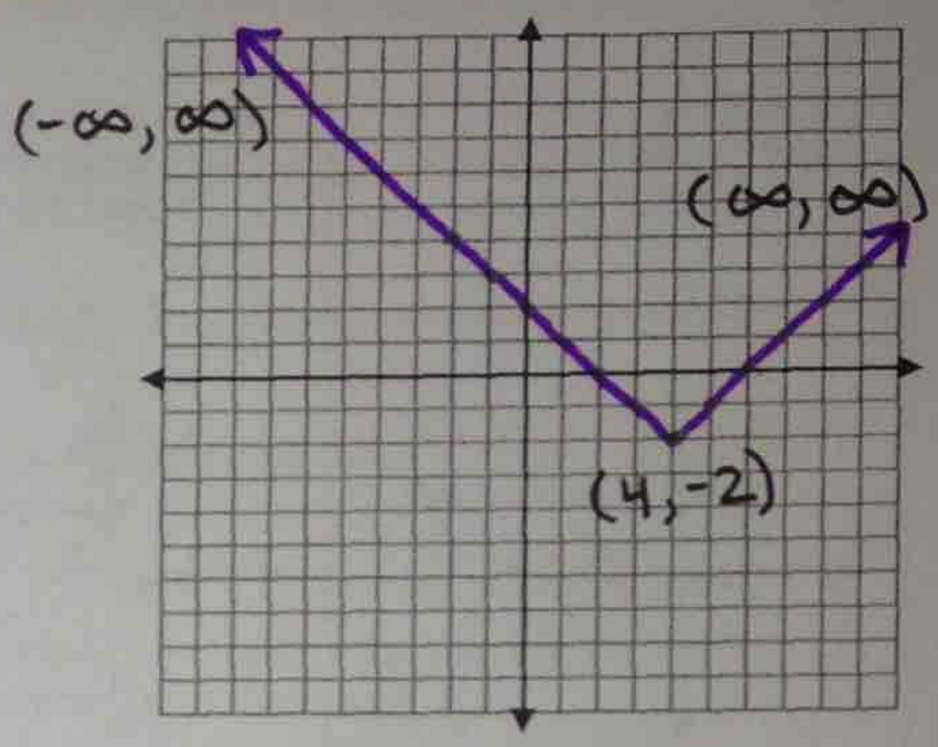
Vertex: (4,-2)

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

Range: $[-2, \infty)$

Interval Increasing: $(4, \infty)$

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



- What similarities do you see between the vertex and the equation?
- What part of the equation do you think gives the graph its shape?

Quadratic #1: $f(x) = (x - 2)^2 + 1$ Shape: U

vertex

x	-1	0	1	2	3	4	5
y	-8	-3	0	1	0	-3	-8

x-intercept: (1,0) & (3,0)

y-intercept: (0,-3)

Max or Min: maximum

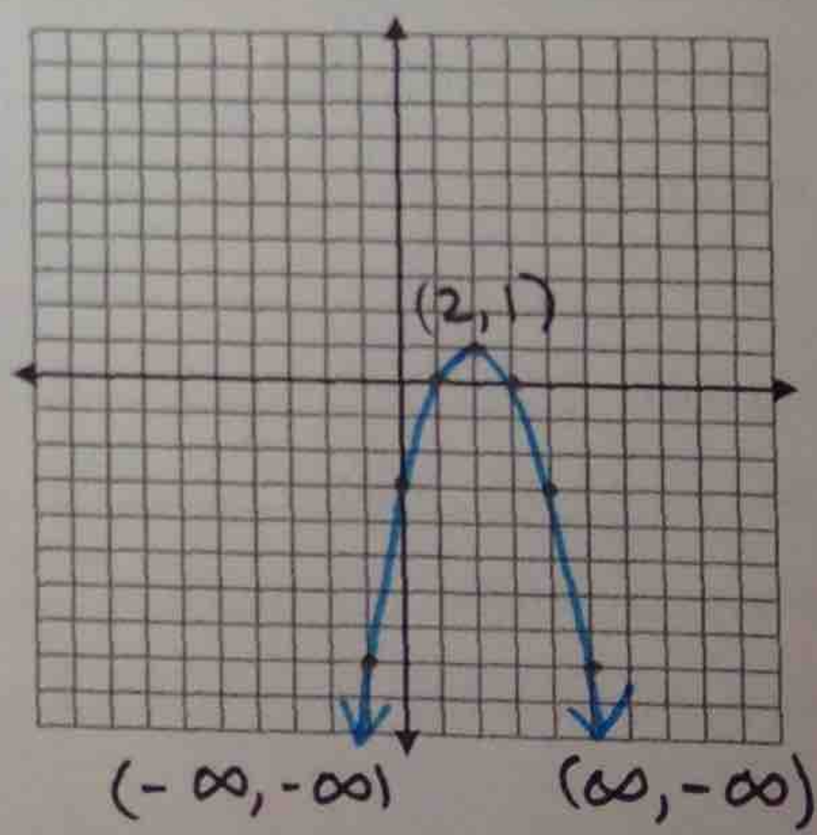
Vertex: (2,1)

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

Range: $(-\infty, 1]$

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

Interval Decreasing: $(2, \infty)$



- What similarities do you see between the vertex and the equation?
- What part of the equation do you think gives the graph its shape?