

NAME:

DATE:

A2.Q2.BERMELLEEMBO: THE QUADRATIC FUNCTION'S GRAPH

**DAY G1
(GRAPHING AND ANALYSIS)**

NOTES

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vertex Form

1. $f(x) = 2(x-3)^2 - 8$

$a = +2$

$f(x) = +/- a(x-h)^2 + k$

Is the graph of $y = f(x)$ concave up or concave down? How do you know?

Concave Up b/c a is positive

$a > 0$

Equation for Axis of Symmetry:

$x = 3$

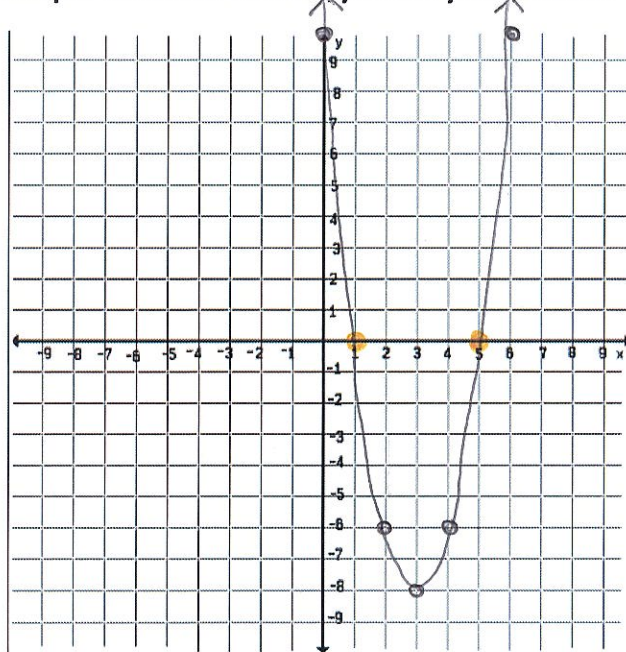
Coordinates of Vertex:

$(3, -8)$

Table of Values:

x	y
1	0
2	-6
3	-8
4	-6
5	0

Graph. Label the axis of symmetry and vertex.



What are the zero(s) of the function?

$x = 1$ OR $x = 5$

Is the vertex a maximum or a minimum?

minimum

State the Domain

all real numbers

State the Range

$y \geq -8$

vertex Form

2. $f(x) = -(x+5)^2 + 4$

$a = -1$

$f(x) = +/- a(x-h)^2 + k$

Is the graph of $y = f(x)$ concave up or concave down? How do you know?

Concave Down b/c a is negative $a < 0$

Equation for Axis of Symmetry:

$x = -5$

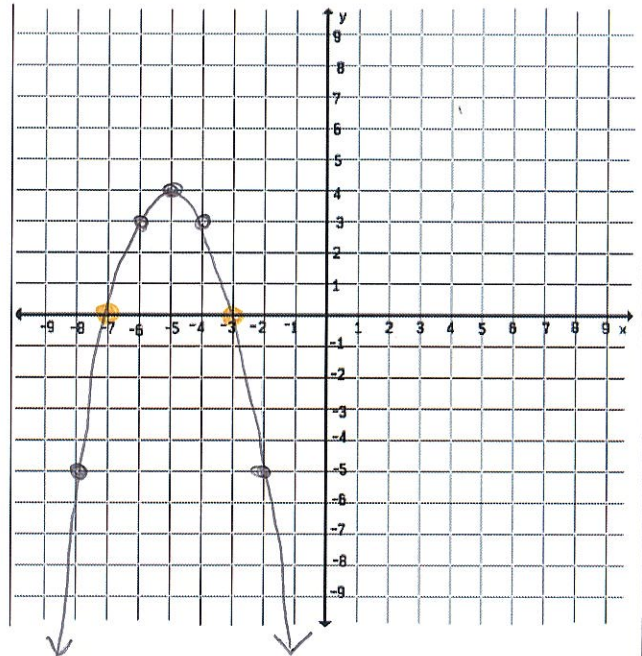
Coordinates of Vertex:

$(-5, 4)$

Table of Values:

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

Graph. Label the axis of symmetry and vertex.



What are the zero(s) of the function?

$x = -3$ OR $x = -7$

Is the vertex a maximum or a minimum?

maximum

State the Domain

all real numbers

State the Range

$y \leq 4$

Standard Form

3. $f(x) = 2x^2 + 12x + 16$

$a = +2$ $b = 12$ $c = 16$

Is the graph of $y = f(x)$ concave up or concave down? How do you know?

Concave Up because a is positive $a > 0$

Equation for Axis of Symmetry:

$$x = \frac{-b}{2a} \quad x = \frac{-(12)}{2(2)}$$

$$x = \frac{-12}{4}$$

$$x = -3$$

Coordinates of Vertex:

$$(-3, -2)$$

$$2(-3)^2 + 12(-3) + 16$$

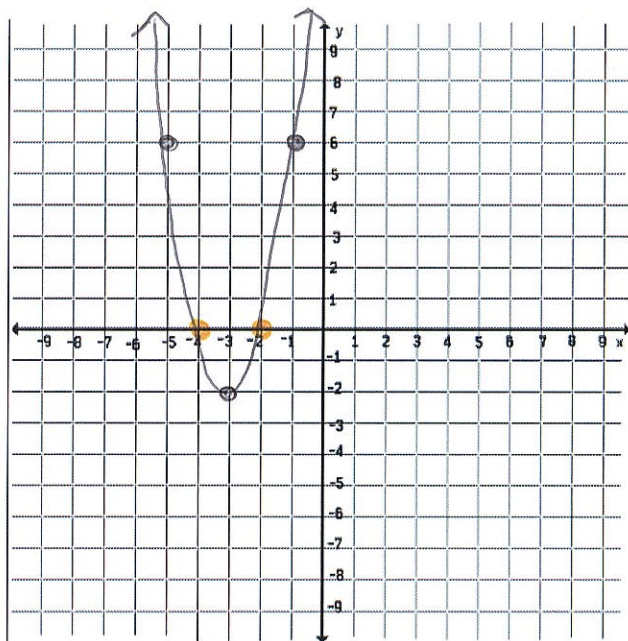
$$18 - 36 + 16$$

$$y = -2$$

Table of Values:

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

Graph. Label the axis of symmetry and vertex.



What are the zero(s) of the function?

$$x = -4 \text{ OR } x = -2$$

Is the vertex a maximum or a minimum?

minimum

State the Domain

all real numbers

State the Range

$$y \geq -2$$

Standard Form

4. $f(x) = -3x^2 + 24x - 45$

$a = -3$ $b = 24$ $c = -45$

Is the graph of $y = f(x)$ concave up or concave down? How do you know?

Concave Down b/c a is negative $a < 0$

Equation for Axis of Symmetry:

$$x = \frac{-b}{2a} \quad x = \frac{-(24)}{2(-3)}$$

$$x = \frac{-24}{-6}$$

$$x = 4$$

Coordinates of Vertex:

$$(4, 3)$$

$$-3(4)^2 + 24(4) - 45$$

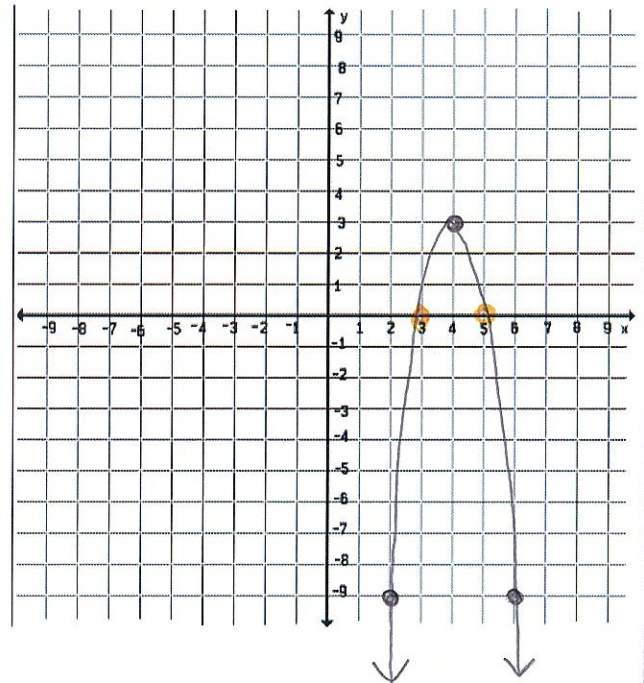
$$-48 + 96 - 45$$

$$y = 3$$

Table of Values:

x	y
2	-9
3	0
4	3
5	0
6	-9

Graph. Label the axis of symmetry and vertex.



What are the zero(s) of the function?

$$x = 3 \text{ or } x = 5$$

Is the vertex a maximum or a minimum?

maximum

State the Domain

all real numbers

State the Range

$$y \leq 3$$