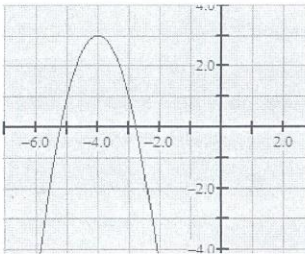
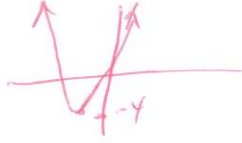


PART A - Multiple Choice (10 Marks)

Circle the letter corresponding to the correct solution.

1. What is the stretch factor of the quadratic function $y = -2(x-1)^2 + 4$? *stretch is always positive*
 [A] -1 [B] -2 [C] 2 [D] 4
2. If a quadratic function has a minimum y value of 2, then the function could be ... *opens up*
 [A] $y = -3(x-5)^2 + 2$ [B] $y = 3(x+5)^2 + 2$ [C] $y = 3(x-2)^2 + 5$ [D] $y = -3(x+2)^2 + 5$
3. Write the following equation in Standard Form... $y = 4(x-3)^2 - 16$
 [A] $y = 4x^2 - 24x + 20$ [B] $y = 4x^2 + 20$ [C] $y = 4x^2 - 12x + 20$ [D] $y = 4x^2 + 24x + 20$
4. What is the y-intercept for the quadratic given by the equation... $y = -\frac{2}{3}(x-3)^2 + 5$?
 [A] (0, 2) [B] (0, 1) [C] (0, -1) [D] (0, -4)
5. What is the vertex of the quadratic function $y = 2x^2 - 12x + 5$?
 [A] (3, 5) [B] (3, -13) [C] (3, -4) *vertex (3, -13)* [D] (6, -67)
6. Determine the axis of symmetry for the quadratic shown:
 [A] $x = 2$ [B] $x = -4$
 [C] $y = 3$ [D] $y \leq 3$
- 
7. Which of the following has its axis of symmetry given by the equation $x = -3$?
 [A] $y = 2(x-3)^2 + 5$ [B] $y = 2(x+3)^2 + 5$ [C] $y = 2(x-5)^2 - 3$ [D] $y = 2(x-5)^2 - 3$
8. Given the graph of $y = a(x+1)^2 - 7$. If the value of a is replaced by $5a$, then the graph...
 [A] shifts upward [B] shifts downward [C] becomes wider [D] becomes narrower
9. What is the range of the quadratic function... $y = -3(x-2)^2 - 5$ *opens down*
 [A] $\{y \leq 5\}$ [B] $\{y \leq -5\}$ [C] $\{y \geq 5\}$ [D] $\{y \geq -5\}$
10. If the graph of $y = 5(x+1)^2 - 4$ is sketched, which of the following is **not** a possible value of y on the graph?
 [A] 5 [B] 1 [C] -4 [D] -6
- 

PART B – Open Response (30 Marks)

Show all your work in the space that is provided.

1. Complete the following for the equation...

$$y = 3x^2 - 24x + 36$$

a) Vertex Form:

$$y = 3(x^2 - 8x) + 36$$

$$y = 3(x^2 - 8x + 16) - 16(3) + 36$$

$$y = 3(x - 4)^2 - 48 + 36$$

$$y = 3(x - 4)^2 - 12$$

[3]

b) y-intercept

$$(0, 36)$$

OR

$$y = 3(0 - 4)^2 - 12$$

$$y = 3(16) - 12$$

$$y = 48 - 12$$

$$y_{int} = 36$$

[1]

c) Vertex: $(4, -12)$

[1]

d) Sketch (label 3 key points):

[2]

e) Axis of symmetry: $x = 4$

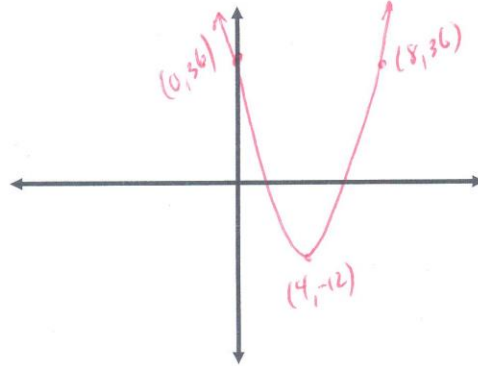
[1]

f) Range: $\{y \geq -12\}$

[1]

g) Circle: Maximum Minimum y-value is -12

[2]



2. Change the following into **standard form** and state the given properties.

[6]

$$y = \frac{2}{3}(x + 6)^2 - 23$$

$$y = \frac{2}{3}(x^2 + 12x + 36) - 23$$

$$y = \frac{2}{3}x^2 + 8x + 24 - 23$$

$$y = \frac{2}{3}x^2 + 8x + 1$$

$$y = \frac{2}{3}(0 + 6)^2 - 23$$

$$y = \frac{2}{3}(36) - 23$$

$$y = 24 - 23$$

$$y_{int} = 1$$

| | |
|--|-------------|
| Vertex | $(-6, -23)$ |
| y-intercept | $(0, 1)$ |
| Sketch: Must have 3 key points labeled | |
| | |

3. Complete the chart shown for the quadratic:

$$y = -5(x+3)^2 + 8$$

[13]

| | |
|-------------------------------|--|
| Standard Form | $y = -5(x^2 + 6x + 9) + 8$ $y = -5x^2 - 30x - 45 + 8$ $y = -5x^2 - 30x - 37$ |
| Direction of Opening | opens down |
| Stretch Factor | 5 |
| Vertex | $(-3, 8)$ |
| y-intercept | $(0, -37)$ |
| Domain | $\{x \in \mathbb{R}\}$ |
| Range | $\{y \leq 8\}$ |
| Equation for Axis of Symmetry | $x = -3$ |
| Maximum OR Minimum | Max |
| Minimum /Maximum Value | 8 |

Sketch: Must have 3 key points labeled

