CAC
CAIRO AMERICAN COLLEGE

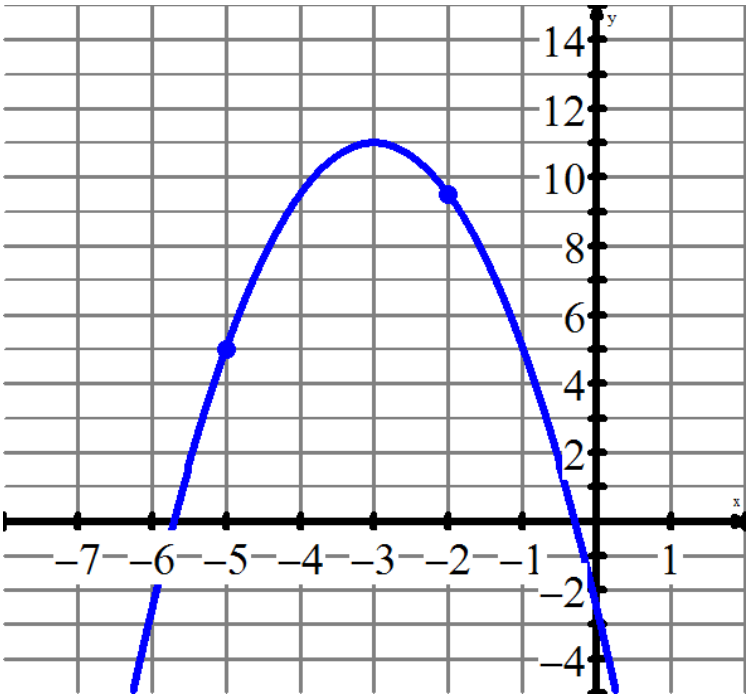
Name: _____Date : _____

IM 3 Quiz 3.1 V2 – Working with Quadratic Functions
Teacher: Mr. Santowski and Ms. Aschenbrenner

Score:_____

1. From the diagram of the parabola:
   a. Determine its equation in vertex form. Show the key steps of your solution.

(4 marks)



   b. Describe the transformations applied to the parent function ($y = x^2$) to create the graph above.

(3 marks)

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2. The following questions deal with analyzing an equation of a quadratic function in order to answer questions about the quadratic function & its features. Use any algebraic strategy in your solutions.

(8 marks)

Given the parabola $y = -\frac{3}{2}x^2 - 6x + 12$:

a. Determine the EQUATION of the axis of symmetry

(1)

b. Determine the coordinates of the vertex.

(2)

c. Determine the x-intercepts of the quadratic function $f(x) = 5x^2 - 13x - 6$

(2)

d. Write the quadratic equation $f(x) = 2(x+6)^2 - 5$ in standard form.

(2)

e. Write the equation of a parabola that is narrower than the parent function, $y = x^2$, has its vertex at (4,-2) and has no x-intercepts.

(1)

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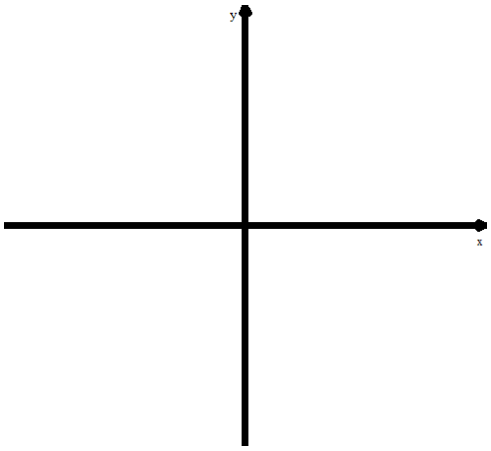
3. A parabola has x-intercepts at x = -3 and x = 7 and goes through the point (5,-8).

(6 marks)

a. Provide a sketch of the parabola, given the details provided. (3)

b. Write the equation of this parabola in vertex form, showing the key steps in your solution. (3)



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4. Ms. A is throwing rocks around in the Waadi. She is standing on a cliff that is 20m high and can throw a rock so that it reaches a maximum height of 32m after 2 seconds.

(7 marks)

a. Draw a sketch of the situation making sure to LABEL all key information.

(2)

b. Determine an equation that can be used to model the height of the rock, ***h*** in meters above the ground, as a function to time, ***t***, in seconds since the rock was thrown. Use the variables ***h*** and ***t*** in your equation.

(3)

c. Ms. A believes that the rock will hit the Waadi floor in about 5 or 6 seconds after she throws the rock. Provide any APPROPRIATE mathematical reasoning to explain why she is (or isn't) correct.

(2)