MCF 3M1 Name:_____

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Vertex and Standard Forms

1. For each of the following relations:
   i) Write down the vertex
   ii) Write down the equation of the axis of symmetry
   iii) Maximum or minimum
   iv) Sketch the graph
   v) Use FOIL to write the equation in standard form

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

b) $y = 0.5(x+2)^2 - 3$

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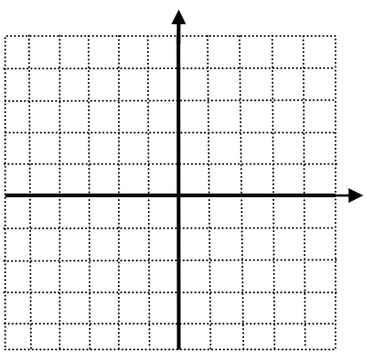

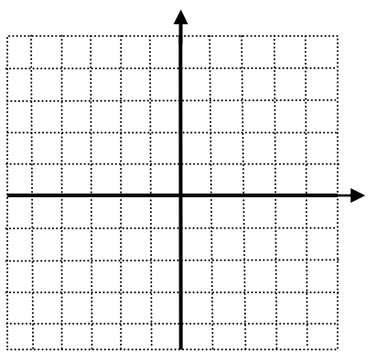

2. Find the equation of the quadratic in vertex form in each of the following cases.
   a) $a = 3$, vertex at (0,-2)
   b) vertex at (7,-4), thru the point (10,50)

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3. The height of a diver is given by $h(t) = -5(t-0.5)^2 + 8.75$ where t is time in seconds and h is its height in metres.
   a) At what time does the diver reach their maximum height?
   b) What is the maximum height reached?
   c) At what height is the diver initially?

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4. For each of the following functions, determine:

a) The y-intercept.
b) The direction of opening.
c) The axis of symmetry.
d) The vertex.
e) The same function in vertex form.

i) $y = x^2 + 2x - 11$

ii) $y = -2x^2 - 16x + 2$

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5. A stone was thrown from the top of a cliff. The height of the stone, in metres above sea level t seconds after it was released, is given by $H = -5t^2 + 20t + 60$.
   a) How high is the cliff above sea level?
   b) How high is the stone after 5 seconds?
   c) How long (seconds) does it take to reach the maximum height?
   d) What is the maximum height reached by the stone?

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