CH. 2 - QUADRATIC FUNCTIONS ASSIGNMENT

Please answer all questions on this sheet and remember to show all your work!

1. State the following key features of the quadratic function $y = (x + 5)^2 - 4$. [2 marks]

a) Vertex:

b) Domain:

c) Range:

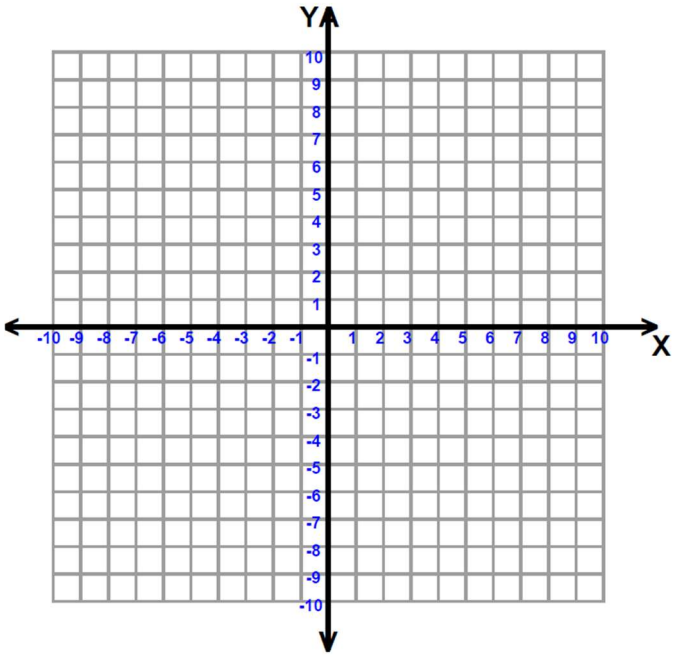
d) x-intercepts:

e) y-intercept:

f) Axis of Symmetry:

g) Congruent equation (or referred to as "parent function"):

h) Graph the quadratic function in the grid below with at least 5 coordinates:



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2. State the following key features of the quadratic function $y = -3x^2 + 36x - 96$. [2 marks]

a) Vertex:

b) Domain:

c) Range:

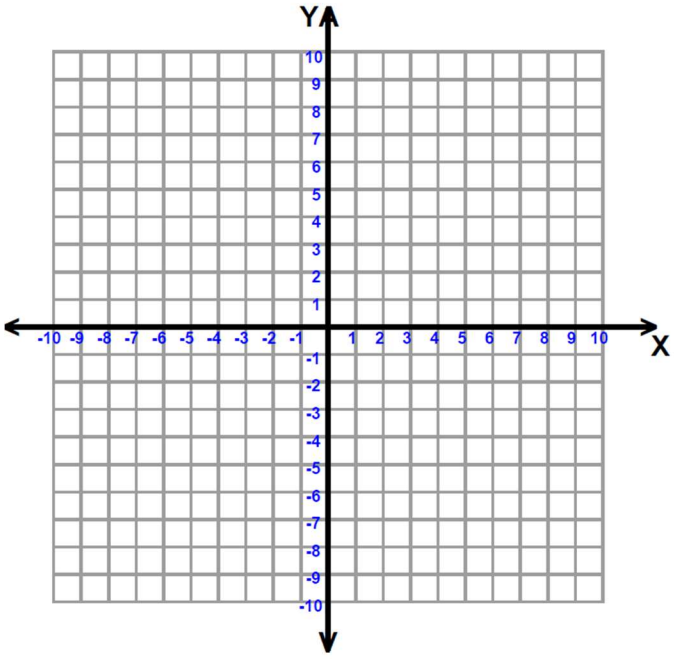
d) x-intercepts:

e) y-intercept:

f) Axis of Symmetry:

g) Congruent equation (or referred to as "parent function"):

h) Graph the quadratic function in the grid below with at least 5 coordinates:



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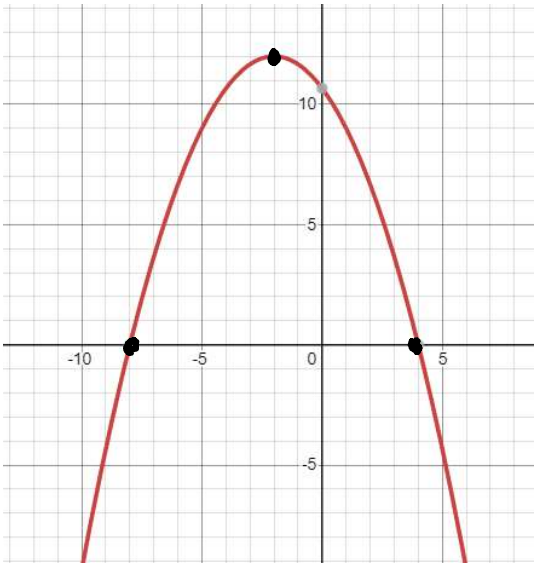
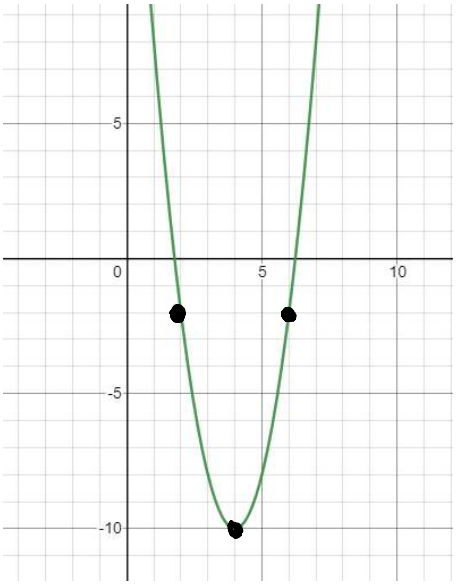
3. Find the x and y-intercept(s) of $y = 2(x - 7)^2 + 3$. Be sure to justify your answers.

4. Determine the equation of the following parabolas (in the form of $y = a(x - p)^2 + q$) by using the coordinates given. Be sure to show steps and/or explain the thought processes. [2 marks]

a)



b)



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5. If the parabola $y = x^2$ undergoes the following transformations:
   reflected over the x-axis, compressed vertically by a factor of $\frac{1}{5}$,
   and translated 3 units left and 7 units up, what is its new equation?

6. What is the equation of the parabola with vertex $(5, 2)$ and an x-intercept of $x = -1$?

7. Completing the square for this equation: $y = -3x^2 + 15x + 7$.

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8. You are the manager of a donut shop. Presently, you sell your donuts for $2.00 each and every day you sell 600 donuts. However, you are wondering if you could make a bit more profit by raising the price slightly. Your marketing research shows that for every $0.10 you raise the price, you will sell 5 less donuts. What price would result in the most revenue?

   Solution: Let x = the number of price increases

9. Determine the maximized area of a rectangle that has a perimeter equal to 88 m by creating and solving a quadratic equation. What is the length and width of this rectangle?