Chapter 8, Graphing Calculator Activities **Name:**

1. Graph each function and find the vertex using the minimum or maximum feature.
   a) $f(x) = x^2 - 3x + 5$
   b) $g(x) = -5x^2 - 2x + 8$

2. Determine graphically the number of real solutions for each equation.
   a) $x^2 - 12x = -36$
   b) $x^2 - 8x + 2 = 0$
   c) $-x^2 - 2 = 0$

3. For each equation in exercise #2, find the discriminant D and determine whether $D > 0$, $D = 0$, or $D < 0$.

4. Find all real solutions for each equation in exercise #2.

5. A child standing on a box throws a ball straight up into the air at a velocity of 50 feet per second. The height h of the ball after t seconds is modeled by the function $h(t) = -16t^2 + 50t + 5$.
   a) Graph $h(t)$ and determine an appropriate window for the problem.
      Xmin _____ Xmax _____ Ymin _____ Ymax _____
   b) How high is the ball when it is released from the child's hand?
      What point does this represent on the graph?
   c) How high is the ball after 1/2 second?
   d) After how many seconds does the ball reach its maximum height?
      What point does this represent on the graph?
   e) What is the maximum height of the ball?
   f) After how many seconds does the ball hit the ground?
      What point does this represent on the graph?

6. The following data can be modeled by a quadratic function of the form $f(x) = ax^2$.
   Graph a scatterplot of the data and determine a function that models the data.

x	6	9	10	12
$f(x)$	12	27	33 1/3	48

7. For each data set, create a scatterplot and determine whether it can be modeled by a linear function, a quadratic function, or neither. If the data set can be modeled by a linear or quadratic function, write a function to model the data.

A.

x	y
2	0.3
5	0.7
10	1
20	2

B.

x	y
-8	-19
5	20
10	35
15	50

C.

x	y
-3	51
0	18
1	11
5	3