Worksheet 3
Maximum and Minimum Problems

1. An object is fired vertically upward from the top of a building. The height, h, of the object above the ground, in meters, t seconds after being fired is given by the equation $h = -5t^2 + 50t + 40$. Determine the maximum height of the ball and when it occurred.

2. The power, P, in watts, that can be produced in an electrical circuit when a current, I, in amperes, is flowing through it is given by the equation $P = -12I^2 + 120$. Find the maximum power that can be produced by the circuit. As well, find the current that produces the maximum power.

3. Find two numbers whose sum is 16 and whose product is a maximum.

   A) Complete the table.

First Number (x)				
Second Number				
Product (y)				

   B) What type relationship exits between the first number and the product? (Hint: Find the differences.)

   C) Use your TI-83 to determine the equation of the curve of best fit.

D) Use your equation to find the vertex of the parabola.

E) Interpret the vertex by completing the statement below.

The maximum product is _____ and one of the numbers is _____. The other number is _____.

4. Find two numbers that differ by 15 and have a product that is a minimum.

A) Complete the table.

First Number (x)				
Second Number				
Product (y)				

B) Use your TI-83 to determine the equation of the curve of best fit.

C) Use your equation to find the vertex of the parabola.

D) Interpret the vertex by completing the statement below.

The minimum product is _____ and one of the numbers is _____. The other number is _____.

5. Find two numbers whose sum is 20 and whose product is a maximum.

Table:

First Number (x)				
Second Number				
Product (y)				

Quadratic Equation of the Curve of Best Fit:_____

Vertex:

Interpret vertex: (Be sure to state the maximum product and what the two numbers are.)

6. Find two numbers whose sum is 20 and whose product is a maximum.

Table:

First Number (x)				
Second Number				
Product (y)				

Quadratic Equation of the Curve of Best Fit:_____

Vertex:

Interpret vertex: (Be sure to state the maximum product and what the two numbers are.)