Homework 7

Problem 1 is similar to Problems 1-9 on page 200. Problem 2 is similar to Problem 17 on page 201. Problem 3 is similar to Problem 21 on page 201.

1. Graph the given quadratic function. Find the x- and y-intercepts of each graph, if any exist. If it is given in general form, convert it into standard form. If it is given in standard form, convert it into general form. Identify the vertex and the axis of symmetry and determine whether the vertex yields a maximum or minimum.

   (a) $f(x) = -(x-1)^2 + 2$

   (b) $f(x) = 2x^2 - 4x - 6$

2. The temperature T, in degrees Fahrenheit, t hours after 6 AM is given by:

$$T(t) = -\frac{1}{2}t^2 + 8t + 32, \quad 0 \le t \le 12$$

   What is the warmest and the coolest temperatures of the day? When do they happen?

3. What is the largest rectangular area one can enclose with 2 feet of string?