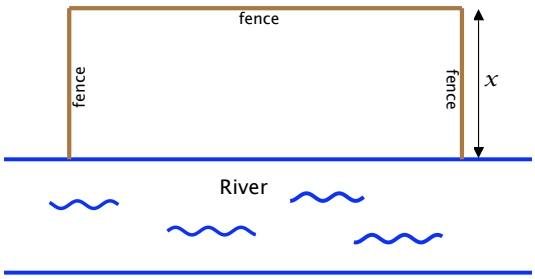
Math 111 Worksheet #13
November 20, 2007

1. Find the vertex and line of symmetry of the quadratic function $f(x) = 2x^2 - 12x + 10$. Is the graph of $f(x)$ opening up or down?

2. A farmer wants to enclose a rectangular area against a straight riverbank with 3 sides of fencing. He can afford 100 feet of fencing. Let x be the width of the enclosure. (See figure below.)



   (a) Find a formula that gives the area of the rectangular enclosure given the width x.

   (b) What are the dimensions of the enclosure with maximum area? What is the maximum area?

3. Decompose the function $h(x) = \sqrt{2e^x + 1}$ into 2 new functions $f(x)$ and $g(x)$ so that $h(x) = f(g(x))$. (Note: Answers may vary.)