# Quiz 5A, Calculus I
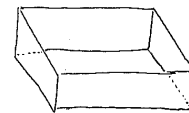## Dr. Graham-Squire, Spring 2013

Name: _____

1. (4 points) A rectangular piece of paper of size 15×8 inches is given. You want to cut out identical squares from each corner and then fold up the edges to make an open-topped box of *maximum* volume (see diagram). Use calculus to find out what will be the dimensions of the box that has the maximum volume. Make sure to confirm that your solution is a maximum.
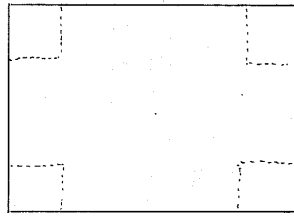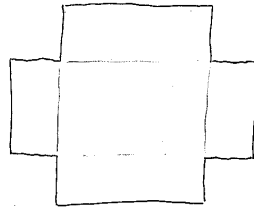
Paper   Corners cut out   Box

2. (3 points) Use calculus to find the absolute maximum and absolute minimum of the function $f(x) = x^3 - \frac{7}{2}x^2 + 3$ on the interval [-1,4].

3. (3 points) Sketch the graph of a continuous function $f(x)$ that satisfies the following:

- $f(0) = 0$
- $f'(x) > 0$ on intervals $(-\infty, -1)$ and $(1, \infty)$
- $f'(x) < 0$ on $(-1, 1)$.
- $f''(x) > 0$ on the intervals $(-\infty, -1)$ and $(-1, 3)$
- $f''(x) < 0$ on $(3, \infty)$.