Math 141, Fall 2009
Test #2 Redo

Instructions: Redone problems are due Tuesday 11/17/09 at the start of class - no exceptions.

You must not work with or consult any other person (whether fellow Math 141 students or otherwise).

You may use a calculator, but give solutions as exact numbers whenever possible (e.g., do not round off square roots, expressions involving π or e, etc.)

You must write up your solutions cleanly and clearly (use a separate sheet(s) of paper).

If you earn a higher score on a redo problem than you did on the corresponding problem on the test, I will average the two scores. If you earn fewer points on a redo problem (or choose not to submit it), you will retain your initial score. Thus, redoing a problem cannot lower your grade.

Problem R3b [10 pts]

Evaluate

$$\lim_{x \to \infty} (9^x + 7)^{\left(\frac{1}{2x-5}\right)}.$$

Problem R4 [20 pts] Let A be the region lying above the x-axis and under the graph of $f(x) = 16 - x^4$. A rectangle is to be inscribed in A so that one side of the rectangle lies on the x-axis. Find the dimensions (base and height) that maximize the area of the rectangle.

Problem R5 [20 pts] An ice cream cone is 15 cm high and has diameter 5 cm at its top. The cone is partially full of melted ice cream, which is dripping out of the bottom of the cone at a rate of 3 cm^3/sec. The top surface of the ice cream is a circle that shrinks as the ice cream melts. At what rate is the area of that surface decreasing when there are 60 cm^3 of ice cream left in the cone?