

**Problem Set 6      Calculus 2      Due 4/9/04**

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 5 points. For full credit indicate clearly how you reached your answer. All work must be legible and submitted on clean paper without ragged edges.

1. A  $70^\circ$  zucchini is placed in a  $350^\circ$  oven. If the zucchini has been heated to  $150^\circ$  after 5 minutes, use Newton's Law of Cooling to find a formula for its temperature after  $t$  minutes and use it to find the temperature after 10 minutes.

2. Suppose that the oven from problem 1 is not pre-heated, but instead begins at  $70^\circ$  and warms up linearly to  $350^\circ$  after 10 minutes. Use Euler's method to estimate the temperature of the zucchini after 10 minutes if it's placed in the oven when the oven is turned on. First use  $\Delta t = 2$  minutes, then  $\Delta t = 0.5$  minutes. Are your estimates higher or lower than the true value should be? Why?

3. Do Problem #16 in §11.5.

4. Do Problem #18 in §11.5.