MCS 118 – Calc/Precalc I – Fall 2007

1. For each of the following functions, find the maximum and minimum values on the given interval, if they exist. You can use whichever method is appropriate, the first derivative test, second deriviative test, or a table of values.

   (a) $f(x) = -(x-5)^2$ on $[0, 10]$.

   (b) $f(x) = 5 + 3x^2 - x^3$ on $[0, \infty)$.

   (c) $f(x) = \dfrac{x}{x-1}$ on $(0, \infty)$.

2. (This is a red problem, modified from Hughes-Hallett, Calculus)) Tom is running a small furniture business. He signs a deal with BK Chocolate Catering to deliver chairs. BK isn't quite sure how many chairs she needs, although she knows she won't need more than 400. Tom will charge her \$90 per chair for up t0 300 chairs. If she orders more than 300 chairs, he'll reduce the price by \$0.25 per chair (on the whole order) for every chair over 300 that she orders. What are the maximum and minimum revenues that Tom can make on this deal?