Homework 7 - Math 141, Frank Thorne (thornef@mailbox.sc.edu)

(a) What do the words **absolute maximum**, **absolute minimum**, **local maximum**, and **local minimum** mean?

(b) What is the first derivative theorem for local extreme values? Give a brief, informal explanation for why it is true.

(c) (Trick question. Explain why.) Explain how to find all the absolute maxima of a function.

(d) Explain how to find the absolute extrema of a continuous function on a closed interval.

(e) Thomas, Ch. 4.1, 1-4, 53-68 (even required, odd additional).

(f) What is the first derivative test for local extrema? Explain roughly why it is true.

(g) Thomas, Ch. 4.3, 1-6, 19-34 (even required, odd additional). In all cases **graph the function in question**.

(h) What does the first derivative tell you about the shape of a graph?

(i) What does the second derivative tell you about the shape of a graph?

(j) What is an inflection point? How do you find them? Why are they interesting?

(k) Thomas, Ch. 4.4, 9-18, 31-40 (even required, odd additional); 81-84 (all).