Homework 8 - Math 141, Frank Thorne (thornef@mailbox.sc.edu)

Due Monday, October 29

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

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

(c) Stewart, Ch. 4.3; 5, 6, 19, 21, 30-32, 61-65.

(d) Stewart, Ch. 4.3; 24-29, 35-50 (even).

For all the following graphing problems, explicitly describe each of the following when relevant to your graph.

(1) Where are the x- and y-intercepts?
(2) Where is the graph positive and negative?
(3) Where are the critical points?
(4) Where is the graph increasing and decreasing?
(5) Where are the inflection points?
(6) Where is the graph concave up and concave down?
(7) Where are the asymptotes? (If $f(x)$ has asymptotes)

(e) Stewart, Ch. 4.5; 1-10, 31-44 (even).

(f) Graph $f(x) = 2\cos x + \sin 2x$.

(g) Graph $f(x) = 2\sin x + \cos 2x$.

(h) Graph $f(x) = e^{-x}$.

(i) Graph $f(x) = e^{-x^2}$.

(j) Graph $f(x) = \ln(4 - x^2)$.

Additional problems:

(a) Stewart, Ch. 4.3; 24-29, 35-44 (odd).

(b) Stewart, Ch. 4.5; 5-10, 35-44 (odd).

Bonus: (2 points for either) 4.5, 53, 66.