MATH 34A APPLICATIONS OF DERIVATIVES

Final review session (drop-in): 6/11 (Tue) 10-12 and 6/12 (Wed) 1-3 in the MathLab (SH 1607)

I. Increasing/Decreasing/Extrema

$f'(a)$ is positive means f is increasing/decreasing at a. (circle one)
$f'(a)$ is negative means f is increasing/decreasing at a. (circle one)

What about when $f'(a) = 0$? How would the graph of f look like at $x = a$?

If $f(x)$ has a local maximum/minimum at the point $x = a$, what can you say about $f'(a)$?

Example. The price of a certain computer stock t days after it is issued for sale is $p(t) = 100 + 20t - 5t^2$ dollars. During what period of time does the stock price rise? To make the most profit, when should you sell it?

II. Optimization

These should remind you of the express-in-terms-of problems you have done this quarter.

Example. A rectangular field will have one side made of a brick wall and the other three sides made of wooden fence. Brick wall costs \$20 per meter and wooden fence costs \$5 per meter. If you only have \$10000 to spend, what dimensions should the field have so that the area is maximum?

Example. A cylindrical metal can is to have a volume of 30π cubic inches. What height minimizes the amount of metal used?

Example. A commuter railway 800 passengers per day and charges each one 2 dollars per day. For each 4 cents that the fare is increased, 5 fewer people will go by train. What is the greatest profit that can be earned?
