

Your name: \_\_\_\_\_

Quiz no. 2 (1100-1 Quantitative Analysis,  
Spring 2008)  
February 8, 2008

**25 min. No symbolic calculators allowed (TI-89 and similar)!**  
(TI-86 or lower are allowed.) Show all work.

1. (*7 points*) Find all points of inflection of the graph of  $f(x) = \frac{1}{12}x^4 - 3x^3 - 10x^2 + 20x + 5$ . Also determine the intervals where the graph is concave up or down, respectively.

2. (*7 points*) Find the relative minimum and maximum points of  $f(x) = x^3 - 12x^2 + 45x + 35$ . *Hint: in this problem it is less work to use the 2nd derivative test.*

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3. (11+1 points) A company estimates that the demand function for its product is given by  $p(x) = 400 - \frac{x}{60}$ , where  $x$  is the number of units it wants to sell per month, and  $p(x)$  the price (in dollars) it can charge.
- (a) Compute the revenue function  $R(x)$ . *Hint: the revenue can be computed as the number of units times the price per unit.*
  - (b) What production level should the company choose to maximize the revenue?
  - (c) The costs per unit are 300\$. What production level should the company choose to maximize the profit? *Bonus question: how much should the company charge for its product in this case?*