MATH 122 Spring, 2012 Quiz #3 Name:_____

1. Let $C(q)$ represent the cost and $R(q)$ the revenue of producing q items, in \$.
   a. If the marginal cost $C'(50) = 24$ and the marginal revenue $R'(50) = 35$, approximately how much profit is produced by the fifty-first item?

1 $35 - 24 = 11$

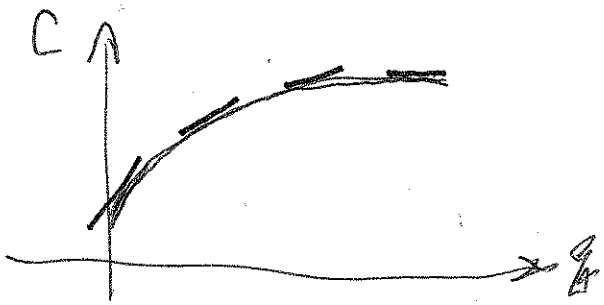
   b. If $C'(100) = 38$ and $R'(100) = 35$, should the company produce 101 items? Why or why not?

2 No - because the marginal cost is larger than the marginal revenue. Cost is rising faster than revenue.

There will be a loss of \$3 on the 101st item, but we don't know overall status of profit/loss.

2. If the cost function is increasing and concave down is the marginal cost going up or down? Illustrate graphically or explain.

2



MC is going down because TC's are getting less steep.

3. Compute the derivative function $\frac{dy}{dt}$ for $y = t^4 + 3t^2 - 6 + \frac{1}{t^4}$. $= t^4 + 3t^2 - 6 + t^{-4}$

5 $\frac{dy}{dt} = 4t^3 + 6t - 0 - 4t^{-5}$

Then compute the derivative.

First rewrite y so you can use the power rule.