Math 104 90A[1] September, 27th, 1999. Worksheet 5

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1. If $f(x) = 2x + 3, g(x) = \sqrt{1+3x}$, and $h(x) = f(g(x))$, find $h^{'}(x)$.

2. If $s = (t^4 - 1)^{86}$, find $\frac{ds}{dt}$.

3. If $r = q(q^2 + 4)^{1/3}$, find $\frac{dr}{dq}$.

4. Let m be the number of employees. Let $q = \sqrt{m^3 - 1}$ and $p = \frac{9}{q+9}$. Using the chain rule, find marginal revenue product (i.e. $\frac{dr}{dm}$....the rate of change of revenue with respect to the number of employees).

5. The Volume V of the sphere as a function of time t is

$$V = \left(\frac{2t+5}{t^2+1}\right)^4$$

   Find the rate of change of volume with respect to time at $t = 1$.

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[1] **Office hours:** Monday: 1:45-3:15pm, Tuesday:3:30-5:30pm, Wednesday 2:15-3:15pm

Math 104 90A[2] September 27th,1999 Review Sheet I

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1. **Triterm I Instructions**
   (a) The Triterm I will be closed book.
   (b) Calculators are allowed.
   (c) Please show your work in the exam. Indicate your answers clearly. Make sure that your donot write erroneous statements.
   (d) The exam will have five questions and shall be worth 50 points in total.

2. **Syllabus for the Triterm I**: 4.1,4.2,4.3,12.1,12.2,12.3,12.5,12.6.

3. **Key concepts**
   (a) Slope of a line, Equation of Line.
   (b) Quadratic function, Vertex.
   (c) Slope of a curve.
   (d) Derivative of a function f.
   (e) Rules of differentiation.
   (f) Relative change, percentage change.
   (g) Total cost, Average Cost, Marginal Cost.
   (h) Revenue, Marginal Revenue, Marginal Revenue Product.
   (i) Marginal propensity to consume, Marginal Propensity to save.
   (j) Average Velocity, instantaneous velocity.

4. **Studying**
   It would be a good idea to go through the Home-work, Worksheet, Quizzes and the Examples solved in the text-book. Review all the key concepts, their definitions and siginificance. 12.7 contains a review of chapter 12. Practice as many problems as you can.

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