This assignment is due by 3:30 pm on March 12, 2008 You can turn it in to me in class or drop it by the office, **Blocker 640D**. Be sure that you follow the homework rules, they can be found on your syllabus. Please work the problems in the order that they are listed.

1. The functions f and g satisfy the properties as shown in the table. Find the indicated quantities.

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
0	1	-3	3	5
1	2	6	7	11
2	-5	0	2	10
3	4	-1	-4	8

   (a) $J'(1)$ if $J(x) = (x^4 + 3)g(2x)$

   (b) $H'(2)$ if $H(x) = g(x^3 + f(x))$

2. Find the values of x where the tangent lines are horizontal.

   (a) $y = 2x^5 - 5x^4 - 50x^3 + 40$

   (b) $y = (x - 5)^4(x + 6)^5$

3. Find the values of x where the tangent lines are horizontal.

   (a) $y = e^{(x^2 - 7x + 5)}$

   (b) $y = \dfrac{-x + 2}{x^2 + 12}$

4. Find the derivatives. **Do not simplify after you take the derivative.**

   (a) $y = \ln\left(\dfrac{(2x - 5)^8(x + 7)^6}{(x^2 + 5)^7}\right)$

   (b) $y = \left[\log_7(4 - x) + 7^{(1 - 3x)}\right]^5$

5. A company has determined that the demand for a product is given by $x = 15 - 0.5p^2$.

   (a) Compute the elasticity when the price is \$4.

   (b) Should the price be raised or lowered to maximize the revenue?

   (c) What price will maximize the revenue?

6. A company has determined that the demand for a product is given by $p = \sqrt{25 - 2.5x}$.

   (a) What price will maximize the revenue?

   (b) Find the interval where demand is inelastic.

   (c) Find the interval where demand is elastic.

7. A manufacturer of tennis rackets has determined that when a particular model of racket is priced at \$240 then the elasticity of demand is $E(240) = 0.82$.

   (a) Should the manufacturer raise or lower the price in order to increase revenue?

   (b) If the price is increased by \$12, what is the approximate effect on demand? (i.e. increase or decrease by what %)

   (c) If the price is changed by \$36, what is the approximate percent change in demand?