Exam #2, Math 8, Dr. M. Bohner, Mar 3, 99.

Name:

1. Given are two differentiable functions f and g with $f(2) = 1$, $g(3) = 2$, $f'(2) = 3$, $g'(3) = 4$, $f(3) = 5$, and $f'(3) = 6$. Find $(f+g)'(3)$, $(f \cdot g)'(3)$, $f'(g(3))$, and $(f \circ g)'(3)$.

2. Calculate the derivative of $f(x) = 2\sqrt{x} + x^2 + \frac{3}{x}$ using **the definition** of the derivative.

3. Use Newton's method with $x_1 = -1$ to find the intersection point of $x^3 + 1$ and x correct to six decimal places.

4. Find the tangent line to the graph of $y^4 + 3y - 4x^3 = 5x + 1$ at the point $(1, -2)$.