Mathematics 1220 Calculus II, Examination 1, Sep 11,13, 2003

You may use graphing calculators. Each problem is worth 20 points. You MUST show your work. Just the correct answer is not sufficient for any points.

1. Differentiate

a. $f(x) = \ln[(x+1)^2]$

b. $g(x) = xe^{5x+3}$

2. Find the definite integral $\int_0^3 2^{x^2} x dx$

3. Find the definite integral $\int_0^3 \frac{\ln(x+1)}{x+1} dx$

4. When a certain amount of liquid milk at 100°C is put in the freezer (held at 0°C) it takes 2 minutes to reach 90°C. How long will it take for the milk to reach 10°C ?

5. Solve the initial value problem $y' + 5y = 5x,\ y(0) = 0.$