Calculus II
Exam 1, Fall 2002

1. Differentiate:

a) $f(x) = e^x \ln x$

b) $g(x) = e^{2x^2 + 3x - 1}$

2. Integrate:

a) $\displaystyle\int e^{\ln x + 1} dx$

b) $\displaystyle\int_0^3 e^x(e^{2x} + 1)dx$

3. I want to invest $5000 in a growth fund so that in 5 years i will have $8000. What interest rate, compounded continuously will produce that growth?

4. A certain radioactive element decays so that in 47 years it has decreased to 80% its original size. What is its half-life?

5. Solve the initial value problem $xy' + y = x, \ y(2) = 5$.