

Calculus II
Exam 1, Spring 2003

1. Differentiate:

a) $f(x) = e^x \ln(x^2)$

b) $g(x) = e^{3\sin(2x)}$

2. Integrate:

a) $\int \frac{xe^{x^2}}{e^{x^2} + 1} dx$

b) $\int_1^3 \frac{(\ln x)^2}{x} dx$

3. The Zombie National Bank offers accounts which pay 10.5% annually, compounded continuously. How much should I invest today so as to have \$12,000 in 6 years?

4. A certain radioactive element decays so that in 100 years it has decreased to 82% its original size. What is its half-life?

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