

Calculus II, Mathematics 1220-90

Examination 1, January 29,31,2004

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. Solve for  $x$ :

a)  $2^x = 16(4^x)$

b)  $(e^x)^2 = e^x e^2$

2. Differentiate:

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

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

3. In 10 years one kilogram of a certain radioactive element decays to .987 kg. What is the half life of this element?

4. Find the definite integral:

$$\int_0^2 x(e^{x^2})dx .$$

5. Solve the initial value problem  $y' - y = 3$ ,  $y(0) = 5$ .