MATH 108 – QUIZ 13 – 3 DECEMBER 1998

Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

1. (3 pts.) The amount of a radioactive substance remaining after $t$ years is given by $Q(t) = Q_0\, e^{-.05t}$, where $Q_0 = Q(0)$. Find the half–life of the radioactive substance, that is, find $t$ such that the amount remaining after $t$ years is $(1/2)Q_0$.

2. (2 pts. each) Find the derivative of the following functions.

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

(b) $f(x) = e^{\sqrt{x}}$

3. (3 pts.) Find the present value of \$40,000 payable 10 years from now if the annual interest rate is 8% compounded continuously.