Quiz 4

Show *all* your work. No credit is given without reasonable supporting work. There are *two* sides to this quiz.

1. [1] TRUE/FALSE: Circle T in each of the following cases if the statement is *always* true. Otherwise, circle F. Assume a, b, and c are positive numbers.

   T   F $\log_7 \sqrt[3]{49} = \frac{2}{3}$

   T   F $\ln\left(\dfrac{a^7}{b\sqrt[3]{c}}\right) = 7\ln a - \ln b + \dfrac{1}{3}\ln c$

2. [3] (§1.2 #39) Simplify the expression.

$$\frac{(8x^2y^3)^{\frac{1}{3}}xy^{-3}}{2x^2y}$$

3. [2] (10/15 Lecture) A sum of $1000 dollars is invested at an interest rate of 8% per year. Approximate or calculate how long it will take this $1000 to double if it is continuously compounded.

4. (WebHW9 #5) A radioactive substance decays in such a way that the amount of mass remaining after t days is given by the function

$$m(t) = 13e^{-0.015t}$$

where $m(t)$ is measured in kilograms.

(a) [1] Find the mass after 45 days.

(b) [3] Find when there is 7.5 kilograms left (that is, half of it has decayed).