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Math 70
Quiz 6

- (1) Using the definition of the logarithm function, show that the following equality is true:

$$\log(A \cdot B) = \log(A) + \log(B)$$

- (2) Expand the following:

$$\log \left(\frac{3x^2}{y+1} \right)^3$$

$$\log \sqrt{(x+1)(x+4)}$$

- (3) Solve for x:

$$10^{3x+4} = 10,000$$

$$5^{\frac{x}{2}-1} = 625$$

- (4) How long does it take for \$15,000 to grow to \$50,000 at an 8.5% annual rate compounded continuously?

- (5) The amount of a radioactive element left of a sample is given by:

$$M(t) = 140e^{-0.031t}$$

Where is t measured in years. What is the half life of this element? That is how long does it take for the sample to decay to half of its original amount?

How long does it take for the sample to decay to $\frac{1}{8}$ of its original amount?