

Exponential functions

Nick Egbert

MA 158 Lesson 17

Example 1. Suppose you invest \$20,000 at 10% compounded weekly for 15 years.

- (a) How much will you have at the end of 15 years?
- (b) How much interest will you have earned?

Example 2. A certain off-shore banking account earns a yearly interest rate of 13% compounded continuously. How much money should be invested so that \$141,101,311 will be in the account after 6 years?

Example 3. Americium-241 is a ubiquitous isotope of Am, and is probably found in your household smoke detector. A sample of Am-241 decays according to the model

$$N(t) = 47.31e^{-.00160376t},$$

where $N(t)$ is the amount remaining in grams and t is time in years.

- (a) What is the initial mass of the sample?
- (b) What mass will remain after remain after 484 days?
- (c) What mass will remain after 200 years?
- (d) What percentage of the mass will remain after 432.2 years?