Logs and Exponentials A5: Applications 2

1. A brush fire is burning a circle in a field. At this moment, the circle has a diameter of 2 feet. The diameter is expanding by a factor of 1.56. How long until the circle has a diameter of 10 feet?

2. You want to invest $700 in the bank. City Bank will give you an interest rate of 2.43% compounded weekly. State Bank will give you an interest rate of 2.46% compounded quarterly.

A. Which bank would you choose to make more money?

B. Using the "best" bank, how long until you have $1000 in the bank?

3. You have 50 grams of $^{26}_{14}Si$. That isotope has a half-life of 2.1 seconds.

A. How much $^{26}_{14}Si$ will be left if 10 seconds?

B. How long until there is only 1 gram left?

4. The population of Carrotville is 2000. The population is increasing by 6.5% per year.

How many people will live in Carrotville in 5 years?

a. Solve using the model: $P = I(1 + r)^t$

b. Solve using the model: $P = Ie^{kt}$