Section 6-5 : Applications

1. We have $2,500 to invest and 80 months. How much money will we have if we put the money into an account that has an annual interest rate of 9% and interest is compounded

(a) quarterly (b) monthly (c) continuously

2. We are starting with $60,000 and we're going to put it into an account that earns an annual interest rate of 7.5%. How long will it take for the money in the account to reach $100,000 if the interest is compounded

(a) quarterly (b) monthly (c) continuously

3. Suppose that we put some money in an account that has an annual interest rate of 10.25%. How long will it take to triple our money if the interest is compounded

(a) twice a year (b) 8 times a year (c) continuously

4. A population of bacteria initially has 90,000 present and in 2 weeks there will be 200,000 bacteria present.

(a) Determine the exponential growth equation for this population.

(b) How long will it take for the population to grow from its initial population of 90,000 to a population of 150,000?

5. We initially have 2 kg grams of some radioactive element and in 7250 years there will be 1.5 kg left.

(a) Determine the exponential decay equation for this element.

(b) How long will it take for half of the element to decay?

(c) How long will it take until there is 250 grams of the element left?

6. For a particular radioactive element the value of *k* in the exponential decay equation is given by $k = -0.000825$.

(a) How long will it take for a quarter of the element to decay?

(b) How long will it take for half of the element to decay?

(c) How long will it take 90% of the element to decay?