

### Quiz 7

1. Suppose you invest  $P_0$  dollars at 9% interest.
  - a. Write a function to model the growth of the investment if it is compounded annually.
  
  - b. Write a function to model the growth of the investment if it is compounded every four months.
  
  - c. Write a function to model the growth of the investment if it is compounded continuously.
  
  - d. Convert your answer to part (c) to  $Ca^t$  form.
  
2. The decay of 300mg of strontium-90 can be modeled by the function  $f(t) = 300 \cdot 0.976^t$ , where  $t$  is measured in years.
  - a. Identify the initial value, decay factor, decay rate, and continuous decay rate. (Hint: You may have to convert to another form to determine some of these.)
  
  
  
  
  
  
  
  
  
  
  - b. How much strontium-90 remains after 5 years?
  
  
  
  
  
  
  
  
  
  
  - c. How long will it take for the sample to decay to 10mg?
  
  
  
  
  
  
  
  
  
  
  - d. What is the half-life of strontium-90?
  
  
  
  
  
  
  
  
  
  
  - e. Suppose an unknown amount of strontium-90 is released into a room. Fifty years later, scientists enter the room and determine that 250mg of the chemical still remain. How much was originally released into the room?