Number: Textbook Section:
Title:

Compound Interest Formula:

1. Find the value of a $6500 investment after 15 years if it earns 7.25% interest and is compounded

   a) annually

   b) quarterly

   c) monthly

   d) daily

Euler's number

$e \approx 2.718$ is

Continuously Compounding Interest formula:

2. Find the value of a \$6500 investment after 15 years if it earns 7.25% interest if it is compounded continuously.

3. Find the value of the same investment when the time is 9 years 3 months.

4. A particular colony of bacteria grows in number according to the function

$$N(t) = 1000e^{0.01t},$$

where t is the time in minutes. Find and interpret the following.

a) $N(0)$

b) $N(1)$

c) $N(4)$

d) $N(69.314)$

5. A sample of carbon 14 decays according to the function

$$A(t) = 80e^{-0.000121t},$$

where t is the time in years and A is in grams. Find and interpret the following.

a) $A(0)$

b) $A(10{,}000)$

c) $A(5730)$

6. Newton's Law of Cooling states that a warm object cools exponentially over time. If a cup of coffee that is 170°F is placed in a room with a temperature of 70°F, the temperature after t minutes is given by

$$T(t) = 70 + 100e^{-0.045t}.$$

Find the temperature of the coffee

a) after 5 minutes

b) after 10 minutes

c) after 20 minutes