5. A population of deer is modeled by the function

$$P(t) = \frac{240}{1+39e^{-.3t}}$$

a) What is the carrying capacity?

b) What is the initial population of deer?

c) What is the growth rate?

d) What is the population of deer after 3 years?

e) When will the population of deer reach 120?

4. Cindy baked a cake at $425°F$ in a kitchen that is $70°F$.

a) What equation will you use?

b) After 15 min the cake is $360°F$.

Find the equation.

c) What will be the temperature of the cake after 30 min?

d) How long will it take for the cake to cool to $90°F$?

3. There is a population of insects that is growing exponentially.

   a) What equation will we use?

   b) If the initial number of insects is 20 and after 3 days there are 50 insects. What would be the equation?

   c) How many insects would there be after 12 days?

   d) How long will it take for there to be 25,000 insects?

Sec 5-7 and 5-8

Show all steps. You may need the following.

$$N = N_0 e^{kt} \;\; or \;\; u(t) = T + (u_0 - T)e^{kt} \;\; or \; A = P\left(1 + \frac{r}{n}\right)^{nt} \; or \; A = Pe^{rt}$$

1. If $1000 is invested at a rate of 6% compounded continuously

a) What equation will you need?

b) How long will it take for the investment to be $5000?

2. How long does it take for an investment to double in value if it is invested at 9% annual interest rate and compounded monthly?

a) What equation will you need.

b) Calculate the value