1-5 Videos Guide

1-5a

- Exponential growth and decay equation
  - $P(t) = P_0 e^{kt}$, where P_0 is the initial population and k is the constant relative growth rate

Exercise:

- A bacteria culture grows with constant relative growth rate. The bacteria count was 400 after 2 hours and 25,600 after 6 hours.
  a) What is the relative growth rate? Express your answer as a percentage.
  b) What was the initial size of the culture?
  c) Find an expression for the number of bacteria after t hours.
  d) Find the rate of growth after 4.5 hours.

1-5b

- Newton's Law of Cooling
  - $T(t) = D_0 e^{kt} + T_s$, where D_0 is the initial temperature difference and T_s is the surrounding temperature