1. At time \( t = 0 \) years a population contains 800 leopards. Two years later, the population is 722.
   a) Assuming that the population \( P \) is a linear function of \( t \), answer the following.
      i) Find a formula for \( P(t) \).
      ii) What is the value of the \( t \)-intercept? What is the meaning in terms of the leopards?
      iii) What is the value of the slope? What is the meaning in terms of the leopards?
   b) Assuming now that the population \( P \) is an exponential function of \( t \), answer the following.
      i) Find a formula for \( P(t) \).
      ii) What is the annual percentage change in the population?

2. You invest $1000. Write an equation for your balance \( t \) years later if your investment
   a) grows 12% per year
   b) declines 12% per year
   c) doubles every 7 years
   d) grows 100% every 7 years

3. Your amount of happiness is measured on a scale of 0 to 100. For a few days, it behaves like a
   trigonometric function, starting at 50 at \( t = 0 \), then reaching a high of 80 at \( t = 6 \) and a low of 20 at \( t = 18 \),
   and continuing in this pattern. Write a formula for \( H(t) \), your amount of happiness at time \( t \).

4. Solve for \( x \). Give both an exact answer and an answer correct to two decimal places.
   \[ 7(1.2)^x = 35(1.1)^x \]