1. $500 is invested in an account which offers 0.75%, compounded monthly.

   (a) Find the amount $A$ in the account as a function of the term of the investment $t$ in years.

   (b) Determine how much is in the account after 5 years.

   (c) Determine how much is in the account after 10 years.

   (d) Determine how much is in the account after 30 years.

   (e) Determine how long will it take for the initial investment to double. Round your answer to the nearest year.
2. The temperature $T$ (in °F) of a roast beast $t$ minutes after it is removed from the oven is given by:

$$T(t) = 70 + 100e^{-0.01t}, \quad t \geq 0$$

(a) Find and interpret $T(0)$.

(b) When is the temperature of the roast beast cooler than 80°F?

(c) Sketch the graph of $y = T(t)$.

(d) Interpret the horizontal asymptote of the graph of $y = T(t)$. 