Math 29
PAL Worksheet 17

1. A warm can of soda is placed into a refrigerator. The temperature T of the soda t minutes after it is placed in the refrigerator is given by $T(t) = 39 + 44e^{-0.058t}$ (in °F).

    a. What is the temperature of the soda when it is placed into the refrigerator?

    b. Find the temperature, to the nearest degree, 15 minutes after it is placed in the refrigerator.

    c. When, to the nearest minute, will the temperature of the soda reach 48°F?

    d. What is the temperature inside the refrigerator? Explain.

2. The population of a town in the year 2000 was 16400 and in 2010 it was 20200. Assuming the population of the town follows an exponential growth model $P(t) = P_0e^{kt}$, what will be the population in 2015? In what year will the population reach 25000?

3. Find the exact value of each of the following without using a calculator:

    a. $b^{\log_{b^2}(3)}$
                       b. $\left(\dfrac{1}{8}\right)^{\log_2 9}$
                       c. $b^{\log_{\frac{1}{\sqrt{b}}}(4)}$