1. Find the exact value of x that solves each equation, then use your calculator to give an approximation of the solution, rounded to the nearest hundredth.

    a. $3\log_x 2 = 4$

    b. $\ln(2x + 7) = 4$

    c. $\ln(x - 4) + \ln(2x + 1) = 2\ln x$

    d. $\log_3(x + 5) - \log_3(2x + 1) = 4$

    e. $\ln(\log x) = 1.2$

2. Assume that the population of the United States can be modeled using the exponential model $P(t) = P_0 e^{kt}$. Suppose the population of the US was 4 million in 1790 and 180 million in 1960. Using this model, what would you estimate the population to be in 2020?

3. In a typing class, the average number N of words per minute typed after t weeks of lessons can be modeled by
$$N(t) = \frac{95}{1 + 8.5e^{-0.12t}}.$$

    a. What is the average number of words typed per minute after 10 weeks of lessons? After 15 weeks?

    b. Estimate the number of weeks of lessons required to achieve an average of 70 words per minute typed.

    c. Does the number of words per minute have a limit as t increases without bound? Explain.