1. Simplify each expression to a single numeric value

    a. $\log_2(128)$ c. $e^{3\ln(5)}$

    b. $\log_3\left(\dfrac{1}{81}\right)$ d. $\ln(2e^2) - \ln(2e^{-3})$

2. Solve the given equation for x

    a. $\ln(x+1) = 3$

    b. $\ln(x+3) + \ln(x) = \ln(4)$

3. Write each expression as a single logarithm.

   (a) $3\ln(x) + 2\ln(y)$

   (b) $\frac{1}{2}\log_2(x) - 2\log_2(y) + \log_2(z)$

   (c) $\ln(7) + 3$

4. Find a function of the form $f(x) = ae^{bx}$ with the given function values.

   a. $f(0) = 2$, $f(2) = 5$ *Hint: First plug $x = 0$ into $f(x)$ to solve for a*

   b. $f(0) = 4$, $f(3) = 1$

5. (a) Explain why $2 = e^{\ln(2)}$

   (b) Use part (a) to explain why $2^{\square} = e^{\ln(2)\square}$

   (c) Use part (b) to explain why $\log_2(x) = \frac{\ln(x)}{\ln(2)}$