## Practice – 1

Once you feel confident with logarithmic functions and equations, complete problems 1 to 5. Check your answers by going to the Solutions tab in Moodle.

**Instructions:** Answer each of the following practice questions on a separate piece of paper. Step by step solutions are provided under the Solutions tab. You will learn the material more thoroughly if you complete the questions before checking the answers.

1. Solve the following equations.

   a. $\ln 2x = 20$

   b. $\ln(3x + 2) = 5$

2. Solve the following equations.

   a. $e^{5+x} = 6$

   b. $\ln e^{5+x} = 6$

3. Rewrite each expression as a single logarithm.

   a. $5\ln x - \frac{1}{2}\ln(z + 2) + \ln m$

   b. $\frac{1}{4}\ln(x + 1) - 2[\ln(x - 5) + \ln x]$

4. Solve for the variable and evaluate.

   a. $y = \ln 24 - 2\ln 2 - \frac{1}{2}(\ln 4 + \ln 9)$

   b. $\ln(3x + 2) = 1$

   c. $\ln(\ln x) = 5$

   d. $y = \ln \sqrt[3]{e^4}$

5. Compare the domains of the functions $f(x) = \ln x^2$ and $g(x) = 2\ln x$.