Practice – 2

Once you feel confident with laws of logarithms, complete problems 1 and 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. Determine the value of y.

   a. $y = \log_2 192 - \log_2 3$

   b. $y = \log 20 + \log 5$

2. Evaluate the following expressions if $\log_2 x = 5$.

   a. $\log_2 8x$

   b. $3\log_2 x^4$

   c. $\log_2\left(\frac{x^3}{16}\right)$

3. Expand each of the following expressions.

   a. $\log_5 \sqrt[5]{x^3 + 1}$

   b. $\log_7\left(\frac{x^5 y}{\sqrt{z}}\right)$

   c. $\log \frac{a^3}{b^2 \sqrt[3]{c^4}}$

4. Rewrite each expression as a single logarithm.

   a. $\log_4 27 - 2\log_4 5 + \frac{1}{2}\log_4 64 - 3\log_4 2$

   b. $\log_2 12 - 5\log_2 2 - \frac{1}{2}(\log_2 4 + \log_2 3)$

   c. $\frac{3}{2}(\log_3 x + 4\log_3 m - 2\log_3 w)$

5. Find the value of y in $y = 2\log_3 6 - \frac{1}{2}\log_3 64 + \log_3 2$.