

**Formative Assessment #17 – Laws of Logarithms**

**RF5.1: I can write a logarithmic expression as a single logarithm, using the laws of logarithms.**

1. Rewrite each expression as a single logarithm. *Show your work.*

a)  $\log b - \log \sqrt[4]{a} + \log z^2$

b)  $\frac{1}{2} [\log_5 x + 3 \log_5 z]$

**RF5.2: I can expand a logarithm expression, using the laws of logarithms, so there are no products, quotients, or powers.**

2. Expand each logarithm. *Show your work.*

a)  $\log_3(xy^7)$

b)  $\log \frac{a^2}{b^4c^7}$

c)  $\log_5 \sqrt[3]{x+1}$

d)  $\log_6 \left[ \frac{x^2(4x+1)}{2x-1} \right]$

**RF5.3: I can use to laws of logarithms to simplify and evaluate logarithmic expressions.**

3. Evaluate the following logarithmic expressions.

a)  $3 \log_8 4 + \log_8 4 + \log_8 2$

b)  $\frac{2}{3} (\log 1000 - \log 10)$