Formative Assessment #32 – Derivatives of Exponential and Logarithmic Functions

C8.1: I can determine the derivatives of exponential functions.
C8.2: I can determine the derivatives of logarithmic functions.

Answer on your own paper.

1. Differentiate. Do not simplify.

   a) $f(x) = e^{3x}$

   b) $y = \ln(x^5 - 1)$

   c) $\dfrac{d}{dx}(x^2 \cdot e^{x^3})$

   d) $y = \dfrac{6^{\pi x}}{2x^2 - 3}$

   e) $f(x) = 7e^{-5} + k^2 \ln(e^4)$

   f) $m(x) = \log_2[(7x^8 - 11)^4]$

2. Determine $f'(0)$ if $f(x) = \ln(x + 4 + e^{-3x})$.

3. Determine the equation of the tangent line to the curve $f(x) = \ln(1 + e^x)$ at the point $(0, \ln 2)$. Express your answer in standard form.