Notes: (Topic 2.13 - Extended) Log and Exponential Equations

On the AP Precalculus Exam, FRQ #4 will require students to solve various logarithmic and exponential function without using a calculator. Below are a part of the directions students will see on this free response problem along with two sample questions that could appear on one of these FRQs.

Directions: **No Calculators Allowed**. Determine the exact value of any expression that can be obtained without a calculator. For example, $\log_2 8$ can be written as 3. Combine terms using algebraic methods and rules for exponents, where applicable. For example, $2x + 3x$, $5^2 \cdot 5^3$, $\dfrac{x^5}{x^2}$, and $\ln 3 + \ln 5$ should be rewritten in equivalent forms.

1. $f(x) = \dfrac{\left(e^x\right)^5}{e^{1/4}}$. Solve $f(x) = e^{1/2}$ for values of x in the domain of f.

2. $g(x) = 8e^{(3x)} - e$. Solve $g(x) = 3e$ for values of x in the domain of g.