COT 3100 Recitation: Log Problems

Set #1

1) What is the value of $(81^{log_3 1234})^{0.25}$?

2) Determine the ordered pair, (a, b), that satisfies the following pair of equations:

$$log_{16} a^2 + log_8 b^3 = 11$$

$$log_8 a^6 + log_{16} b^{10} = 32$$

Note: You may express a and b as a some base raised to an exponent instead of a single value, if you wish.

3) What is the value of a for which $\sum_{i=2}^{10} \frac{1}{log_i a} = 1$?

4) The sequence $\log_{12} 162$, $\log_{12} x$, $\log_{12} y$, $\log_{12} z$, , $\log_{12} 1250$ is an arithmetic progression. What is x?

Set #2

1) Solve for x in the following equation: $log_2 x^3 + log_4(8x^2) = -\frac{5}{2}$

2) If $3^{log_9 x} = 9^{log_3 27}$, what is the prime factorization of x?

3) What is the value of the following summation?

$$\sum_{i=1}^{n} log_{n!} i$$

4) Define a function f as follows: f(1) = 2. For all integers n > 1, $f(n) = (f(n-1))^{2^n}$.

What is the value of $log_{65536}(log_{65536}(f(4))$?

Express your answer in the form $2^a + 2^b$, where both a and b are integers. Note that $65536 = 2^{16}$.