Quiz 6 Solutions
MAC 1147.3881, Fall 2015
Thursday, October 22, 2015

Show all relevant work to support your answer. A correct answer without supporting work will not earn the points. **Problems 3 and 4 are on the back.**

1. (1 point) What is your TA's first name? (Hint: There is no wrong answer)

1. <u>**Charles**</u>

2. (4 points) Use the one-to-one property to solve the equations for x:

   (a) $2^{x-3} = 16$

   > **Solution:** By rewriting 16 as 2^4, we can use the one-to-one property in the textbook to get $x - 3 = 4$. Thus, $x = 7$ is the desired solution.

   (b) $\log(5x + 3) = \log(12)$.

   > **Solution:** Using the one-to-one property in your textbook, we obtain $5x + 3 = 12$. Thus, $x = \frac{9}{5}$ is the solution.

Problems 3 and 4 are on the back.

3. (2 points) Use properties of logarithms to condense the following to a single quantity:

$$3\log_3(x) + 4\log_3(y) - 4\log_3(z)$$

Solution: Condensing using properties of logs from the textbook, we get:

$$3\log_3(x) + 4\log_3(y) - 4\log_3(z) = \log_3 \frac{x^3 y^4}{z^4}$$

4. (3 points) Solve the system of linear equations by using the method of elimination:

$$\begin{cases} x + 5y = 10 \\ 3x - 10y = -5 \end{cases}$$

Solution: To begin, multiply the first equation by (-3), to get

$$\begin{cases} -3x - 15y = -30 \\ 3x - 10y = -5 \end{cases}$$

Now add the two new equations together to get $-25y = -35$, or $y = \frac{7}{5}$. Substituting this y value into either of the original equations, we see $x = 3$, and so $(3, \frac{7}{5})$ is the solution.