

Quiz 6 Solutions
MAC 1147.3079, 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. Charles

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

(a) $3^{x+1} = 27$

Solution: By rewriting 27 as 3^3 , we can use the one-to-one property in your textbook to get $x + 1 = 3$. Thus, $x = 2$ is the desired solution.

(b) $\log_2(x - 3) = \log_2(9)$.

Solution: Using the one-to-one property in your textbook, we obtain $x - 3 = 9$. Thus, $x = 12$ is the solution.

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

$$\log(x) - 2\log(y) + 3\log(z)$$

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

$$\log(x) - 2\log(y) + 3\log(z) = \log \frac{xz^3}{y^2}$$

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

$$\begin{cases} x + 4y = 3 \\ 2x - 7y = -24 \end{cases}$$

Solution: Solving the first equation for x , we see $x = 3 - 4y$. Thus, substituting $x = 3 - 4y$ into the second equation, we get $2(3 - 4y) - 7y = -24$, or by rearrangement $-8y - 7y = -24 - 6$. Then we can solve for y so that $-15y = -30$, and hence $y = 2$. Substituting $y = 2$ into either of the original equations, we get $x = -5$, and so $(-5, 2)$ is the solution.