

**Math 220 – Business Calculus**  
**Spring 2013 Quiz 2**  
**Exponents and Logs**

Points

2 1. Convert to log form:  $16^{1/4} = 2$        $\log_{16} 2 = \frac{1}{4}$

2 2. Convert to exp form:  $\log_5(1/125) = -3$        $\frac{1}{125} = 5^{-3}$

3 3. Combine this into a single log function:

$$2\log_6 3 + \log_6 5 - \log_6 4 = \log_6 \left( \frac{3^2 \cdot 5}{4} \right)$$

3 4. Break this into separate log functions (as in the function for problem 3):  $\log_3(4(x^2+5)/x)$        $\log_3(4) + \log_3(x^2+5) - \log_3(x)$

5. Solve each equation for x:

3  $2^{2x+5} = 8^{3x} = (2^3)^{3x} = 2^{9x}$        $2x+5 = 9x$   
 $x = \frac{5}{7}$

3  $\log_7(4x+3) - \log_7(x-1) = 2$        $\log_7\left(\frac{4x+3}{x-1}\right) = 2$   
 $\frac{4x+3}{x-1} = 7^2 = 49$        $4x+3 = 49x-49$        $x = \frac{52}{45}$  No

6. Answer each question (you do not have to simplify your answer):

2 A couple invests \$4000 at 5% interest compounded quarterly for 12 years. How much money will they have at the end of that time?       $FV = 4000 \left(1 + \frac{.05}{4}\right)^{4(12)}$

How much must be invested at 3% interest compounded continuously in order to have \$14,000 at the end of 7 years?

2  $PV = \frac{14,000}{e^{(.03)7}}$