Math 173 – Quiz #3

February 19, 2015 **Name:** _____
Instructor: Patricia Wrean

Total: 40 points

1. Find the inverse of the following, and state the inverse's domain and range. (5 points)

$f(x) = \dfrac{x}{4+x}$ _____

_____

_____

2. Find each of the following. Give exact answers. (4 points)

a) $\log_4 \dfrac{1}{64}$ _____

b) $\log \sqrt[7]{100}$ _____

c) $\log_{64} 2$ _____

d) $\log_3 0$ _____

3. Calculate the following, rounding your answer to two decimal places. (2 points)

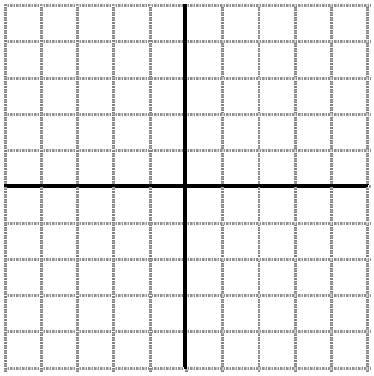
$\log_{1.78} 71.3$ _____

4. Simplify. (4 points)

$2\log_2(6k) - \frac{1}{2}\log_2(81k^4)$ _____

5. Sketch the graph of the following function. Include at least two accurate points on the graph and also indicate the location of any asymptotes. (4 points)

$f(x) = \log_2(-x)$



6. Use composition of functions to show that the following functions are inverses. (4 points)

$f(x) = \frac{1}{2}\log_3(x),\ f^{-1}(x) = 3^{2x}$

7. Solve. Give exact answers. (7 points)

a) $8^{2-y} = 10^{y+1}$ _____

b) $\ln(3-x) + \ln(3+x) = \ln x + \ln(1-x)$ _____

8. An investment is compounded quarterly at 4% interest. How long does it take this investment to double in value? (4 points)

9. In 1969, Dr. Evil demands one million dollars from the UN, and in 1997, he asks the UN for one hundred billion dollars. Assuming continuous compounding, (6 points)

   a) what is the rate of growth for evil villain extortion demands?

   b) if the next Austin Powers movie comes out in 2017, how much money should Dr. Evil be demanding from the UN then?