MATH 111 EXAM 3, Fall 2007

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Score	
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1. a) Find: $\log_5 \sqrt{5}$.

Ans:_____.

b) Simplify: $2e^{-3\ln x}$.

Ans:_____.

c) Find: $\log_{1/2}(16)$.

Ans:_____.

d) Simplify: $\log_3 27^x$.

Ans:_____.

2. a) Find $f^{-1}(x)$ given $f(x) = 5x - 7$.

Ans:_____.

b) Find $f^{-1}(x)$ given $f(x) = x^3 + 2$.

Ans:_____.

3. a) Compute: $\log_7 21$.

Ans:_____.

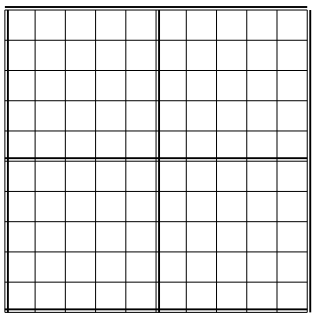
b) Let $P(t) = 1 + 56.5e^{-0.37t}$. Find $P(5)$

Ans:_____.

4. a) Solve: $2\log_3 x = -1$.

Ans:_____.

b) Graph: $y = \log_2(-x)$. (Label at least 3 points.)



5. a) Solve: $2^{3-x} = 8^{x+2}$.

Ans:_____.

b) Write as a single log: $(1/2)\ln(x-2) + (1/2)\ln(x+2)$.

Ans:_____.

Extra Space

Name:

6. Solve:

a) $4e^{5x} = 26$.

Ans:_____.

b) $2^x = 3^{x+1}$.

Ans:_____.

7. Solve: $\log_2(3x-5) + \log_2(x-1) = 3$.

Ans:_____.

8. Michael invests \$7500 at 8.52% compounded continuously.

a) What is the amount after 6 years?

Ans:_____.

b) When will he have $15,000$?

Ans:_____.

9. The mass of a radioactive substance is given by $M = 400e^{-kt}$. When $t = 5$, $M = 200$.

a) Find the decay constant k.

Ans:_____.

b) Find the mass when $t = 8$.

Ans:_____.

10. The number of termites (in thousands) in a fallen tree over 9 days is shown below.

t	1	2	3	4	5	6	7	8	9
y	4.2	5.7	7.0	10.4	15.5	18.8	22.0	29.1	35.2

a) Fit an exponential to the data.

Ans:_____.

b) Estimate the population after 12 days

Ans:_____.

Extra Space