MATH 111 EXAM 3, Spring 2008

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Score	
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1. a) Find: $\log_3 \sqrt{1/3}$.

Ans:_____.

b) Simplify: $4e^{-5 \ln t}$.

Ans:_____.

c) Find: $\log_{1/4}(2)$.

Ans:_____.

d) Simplify: $3^{2 \log_3 x}$.

Ans:_____.

2. a) Find $f^{-1}(x)$ given $f(x) = 3x + 5$.

Ans:_____.

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

Ans:_____.

3. a) Compute: $\log_4 12$.

Ans:_____.

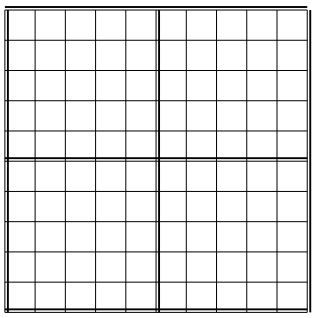
b) Let $a = \ln 2$, $b = \ln 3$. Write $\ln 12$ in terms of a and b.

Ans:_____.

4. a) Solve: $2 \log_x 8 = -6$.

Ans:_____.

b) Graph: $y = \log_3(-x)$. (Label at least 3 points.)



5. a) Solve: $3^{2-3x} = 9^{x-4}$.

Ans:_____.

b) Solve: $e^{x^2} = e^{4x}/e^3$.

Ans:_____.

Extra Space

Name:

6. Solve:

a) $3e^{-6x} = 11$.

Ans:_____.

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

Ans:_____.

7. Solve: $\log_3(2x-1) + \log_3(x-2) = 3$.

Ans:_____.

8. Mary invests \$5000 with interest compounded continuously. The amount doubles in 6 years.

a) What is the interest rate?

Ans:_____.

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

Ans:_____.

9. A 40 gm mass of a radioactive substance decays to 25 grams in 5 years.

a) Find the decay constant k.

Ans:_____.

b) Find the mass after 8 years.

Ans:_____.

10. The number of fire ants (in thousands) in a colony over 8 days is shown below.

t	1	2	3	4	5	6	7	8
y	8.1	11.3	14.1	20.6	31.4	37.5	41.9	59.4

a) Fit an exponential $y = Pe^{kt}$ to the data.

Ans:_____.

b) Estimate the population after 10 days

Ans:_____.

Extra Space