PRACTICE EXAM 3 - MATH 111

DATE: Monday, November 1
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 3 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Use a small table to roughly sketch the graphs of the functions $f(x) = \frac{1}{2}5^x$ and $g(x) = \log_{1/3}(x-2)$.

2. Find the domain of the function $f(x) = \log_{2004} \frac{x^2+7x-8}{2x^2-11x+5}$.

3. Solve the following exponential equations:

   (a) $2(e^x + 7) = 24$

   (b) $3^{2-x^2} = 4$

4. Solve the logarithmic equations:

   (a) $\log(x^2) = (\log x)^2$

   (b) $\log_4(x+3) + \log_4(x-3) = 1$

5. Your mom wants to borrow \$ 6,000 in order to settle some property affairs. She knows that you are taking George's Math 111® and she thinks that you are doing well. She asks your advice on how much she should borrow from your local bank if she is going to repay in 30 months and the bank is charging a discount rate of 7.5%. Give your mom a good advice!

6. In the New Testament, Jesus commends a widow who contributed 2 mites to the temple treasury. A mite was worth roughly $\frac{1}{8}$ of a cent. Suppose the temple had invested those 2 mites at 4% interest compounded quarterly. How much would the money be worth 2000 years later?