

HOMEWORK 2 - MATH 151

DUE DATE: Monday, February 4

INSTRUCTOR: George Voutsadakis

Read each problem **very carefully** before starting to solve it. Two out of the eight problems will be chosen at random and graded. Each problem graded will offer you 5 bonus (extra) points towards your class average. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Graph the exponential function $f(x) = 3^x$ using the small table of values.
2. Use the previous problem, shifts and reflections to graph the exponential function $f(x) = 3^{-x} - 4$. Clearly indicate the asymptote.
3. Graph the exponential function $f(x) = e^x$ using the small table of values. Then use shifts and reflections to graph the exponential function $g(x) = e^{x+2} - 1$.
4. Solve the exponential equations
 - (a) $2^x \cdot 16^{-x} = 8^x \cdot 2$.
 - (b) $(e^4)^x \cdot e^{x^2} = e^{12}$.
5. If $2^x = 3$, what does 4^{-x} equal to?
6. Suppose that at time $t = 0$ you open an account in a bank by depositing \$500 and that the yearly interest earned in that account is 10%. How much money will you have in your account at time $t = 1$ year? How much money will you have at time $t = 2$ years? How about at time $t = n$ years after opening the account? (Assume that you do not make any further deposits or withdrawals from your account.)
7. Change the exponential expressions to logarithms and the logarithmic expressions to exponentials, as appropriate:
 - (a) $c^4 = 12$
 - (b) $3^x = 19$
 - (c) $\log_a 7 = 25$
 - (d) $\log_5 3 = b$
8. Find the domain of the logarithmic function $f(x) = \log_7 \frac{3x-9}{2-x}$.