

MATH 1111 PRACTICE TEST 4 FALL 2009

1. Write in exponential form: $\ln 7 = 1.9459\dots$
2. Write in logarithmic form: $64^{5/6} = 32$
3. Write in logarithmic form: $e^{2.4} = 11.02317\dots$
4. Without using a calculator evaluate $f(x) = \log_2 x$ for $x = 32$
5. Use a calculator to evaluate $\log_{10} 45$. Round your answer to two decimal places.
6. Solve for x : $\log_7 7^3 = x$
7. Use a calculator to evaluate $\log_5 36$. Round your answer to four decimal places.
8. Rewrite $\ln 36$ in terms of $\ln 3$ and $\ln 4$
9. Approximate $\log_b 18$ given that $\log_b 2 = .3869$ and $\log_b 3 = .6131$
10. Use the properties of logarithms to rewrite $\log \frac{xy}{z^2}$ as sum, difference and/or constant multiple of logarithms.
11. Use the properties of logarithms to rewrite $\log \frac{x}{\sqrt{x^2+1}}$ as sum, difference and/or constant multiple of logarithms.
12. Condense $2\ln x + \ln(x+3)$ to the logarithm of a single quantity
13. Solve $5(2^x) = 215$
14. Solve $\log_x 16 = 2$
15. Solve $2^{4x} = 300$. Find an exact solution and then evaluate the solution correct to three decimal places.
16. Solve $5(2^{(x-1)}) + 14 = 286$. Find an exact solution and then evaluate the solution correct to three decimal places.
17. Solve $\log_5 x + \log_5(x-4) = 1$
18. The number of bacteria in a culture after t hours is modeled by $N = 300e^{kt}$. After 3 hours there are 2000 bacteria.
 - (a) Find the value of k correct to four decimal places.
 - (b) Predict the number of bacteria present after 7 hours.
19. A piece of ancient wood was found to contain 22% of the amount of carbon-14 found in living tissue. How old is the piece of wood? The half life of carbon-14 is 5715 years.

20. The number of people infected by a certain disease on a college campus t days after its outbreak is modeled by $N = \frac{1250}{1 + 49e^{-0.3t}}$. Use the model to predict when 800 people will have been infected.