

Fall 2009 Math 151

Week in Review IX

courtesy: David J. Manuel

(covering 4.3, 4.4)

1 Section 4.3

1. Rewrite $\log_4 16 = 2$ as an exponential equation

2. Calculate the following:

(a) $\log_2 \frac{1}{8}$

(b) $\log_9 27$

(c) $5 \log 2 + 2 \log 5 - \log 8$

3. Solve for a : $\log_8 a = \frac{2}{3}$.

4. Use properties of logarithms to rewrite $\log_b \frac{y^2 \sqrt{z}}{x}$ in terms of $\log_b x$, $\log_b y$, and $\log_b z$.

5. Solve for x : $\log(2-x) + \log(5-x) = 1$.

6. Find the inverse of $f(x) = e^{1/x}$

7. Compute $\lim_{x \rightarrow \infty} \ln(e^{2x} + 2e^x) - \ln(2e^{2x} + e^x)$.

8. The formula to compute the amount of money A in an account earning $100r\%$ interest compounded m times per year after t years is $A = P \left(1 + \frac{r}{m}\right)^{mt}$. If \$10,000 is kept in a CD earning 3% per year compounded monthly, when will the account have \$12,000?

2 Section 4.4

1. Compute and simplify the derivatives of the following:

(a) $f(x) = (\ln(-x))$

(b) $y = (\ln |\sin x|)$

(c) $g(x) = \log_3(x^2 + 4)$

(d) $f(x) = x^2 \ln(2 + 3x)$

(e) $f(x) = \frac{x^2 \sin^3 x}{\sqrt{1+2x}}$

2. Use logarithmic differentiation to find the derivative of $y = a^x$

3. Find the derivative of $f(x) = (1+x)^{1/x}$.