

ASSIGNMENT 5

Applied Math (201-943-DW S1)

DUE Date: FRIDAY November 16th 2010, 10:00am

Instructor: E. Richer

Question 1. 4 marks

Determine the value of x .

(a) $\log_9 x = 3$

(b) $\log_{12} 144 = x - 3$

(c) $\log_x 243 = 5$

(d) $\log_x 5 = \frac{1}{2}$

Question 2. 6 marks

Express each as a sum, difference or a multiple of logarithms. Wherever possible, evaluate the result or any part of the result.

(a) $\log_5 \frac{7}{a}$

(b) $\log_3 \sqrt{27}$

(c) $\log_6 \frac{5}{36}$

(d) $\log_6 \sqrt{72}$

(e) $\log(10000x^3)$

(f) $\log_3(9^2 \times 6^3)$

Question 3. 10 marks

Solve for y in terms of x .

(a) $\log_3 y = \frac{1}{2} \log_3 7 + \frac{1}{2} \log_3 x$

(b) $\log_7 y = 2 \log_7 5 + 2 \log_7 x + 2$

(c) $2 \log_9 y + 2 \log_9 x = 1$

(d) $2^y = e^x$

(e) $10^y = 3^{x+1}$

Question 4. 4 marks

Determine which of the following values is bigger. Hint: Use logarithms to express the numbers in scientific notation.

3^{456} or 4^{329}

Question 5. *1.5 marks*

Use your calculator to evaluate the following (answer with 3 decimal places).

(a) $\log_3 45$

(b) $\log_4 7$

(c) $\log_3(\log_2 12)$

Question 6. *3 marks*

Show how the following expressions could be evaluated without a calculator.

(a) $\log 412 - \log_4 3$

(b) $\frac{1}{3} \log_5 64 \times \log_2 5$

Question 7. *1.5 marks*

Graph the function $y = -\log_{\frac{1}{3}} x + 3$. Give its domain and range.