

University of Waterloo
Term Test 2
Math 109
Mathematics for Accounting

Date: November 23, 2011

Time: 4:30 p.m. - 6:20 p.m.

Number of pages: 10
 (including cover page)

Test type: Closed Book

Additional material allowed:
 Non-programmable, non-graphing non-integrating calculator.

Circle your section number

Instructor	Section	Lecture Time
Fiona Dunbar	001	(12:30 p.m. - 1:20 p.m.)
Paula Smith	002	(1:30 p.m. - 2:20 p.m.)

Instructions

1. Write your name and ID number at the top of this page. Please circle your section number up above.
2. Answer the questions in the spaces provided, using the backs of pages for overflow or rough work.
3. Show all the work required to obtain your answers for full credit.
4. The maximum possible grade is 100 points.

FOR INSTRUCTOR'S USE ONLY			
Question	Mark	Question	Mark
1	/10	7	/5
2	/7	8	/12
3	/18	9	/6
4	/4	10	/7
5	/8	11	/6
6	/7	12	/10
		Total	/100

3. Solve each of the following equations for x .

(a) $\log_2 x + \log_4 x = 1$

(b) $e^{2x-5} + 1 = 4$

(c) $5(2\log x + \log x^2 - \log x) = 15$.

4. The demand equation for a consumer product is $q = 80 - 2^p$. Solve for p and express your answer in terms of natural logarithms.

10. Let

$$A = \begin{pmatrix} 1 & 2 \\ 0 & -1 \\ 7 & 0 \end{pmatrix}$$

and

$$B = \begin{pmatrix} 1 & 3 & 0 \\ 0 & 4 & -1 \end{pmatrix}$$

(a) Which is possible to do: $A + B$ or $A + B^T$? Carry out the operation on the one that is possible.

(b) Which is possible to do: AB or AB^T ? Carry out the operation on the one that is possible.

11. Solve the system

$$\begin{aligned} x_1 + 2x_2 &= 4 \\ 7x_1 - 2x_2 &= 8 \end{aligned}$$

by finding the inverse of the coefficient matrix.

12. Solve the following system using matrix reduction. Express your solution in parametric form.

$$\begin{aligned}x + y + z &= 0 \\7y + 14z &= 0 \\2y + 4z &= 0 \\-5y - 10z &= 0\end{aligned}$$

You may use the following Compound Interest Tables for selected values of n and r .

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This page is for rough work. It will not be graded.