CONCORDIA UNIVERSITY
Department of Mathematics & Statistics

Course	**Number**		**Section(s)**
Mathematics	208/1/CA		All
Examination	**Date**	**Time**	**Pages**
Midterm	July 2013	1 Hour 30 Minutes	2
Instructors			**Course Examiner**
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FORMULAE:

$$A = P(1+i)^n, \quad A = Pe^{rt}, \quad FV = PMT\,\frac{(1+i)^n - 1}{i}, \quad PV = PMT\,\frac{1-(1+i)^{-n}}{i}$$

Special Instructions:

- ▷ Answer all questions.
- ▷ **Only approved calculators are allowed.**

MARKS

[10] **1.** Given the quadratic function $f(x) = 1.9 - 0.6x + 0.1x^2$

(A) Find x and y intercepts algebraically.

(B) Find the vertex form of f

(C) Find the vertex and maximum or minimum.

(C) Find the range of f.

[10] **2.** Solve for x in the following equations:

(A) $3^{x+4} = 27^{x^2-3}$

(B) $\log(x-3) + \log(2-x) = 2\log 2$

(C) $e^{3x^2+7x} = e^{3-x}$

(D) $\log_2(x^2+3) = 2$

PLEASE TURN OVER

[10] **3.**

(A) If the first and 10th terms of an arithmetic sequence are -10 and 17, respectively, find the 103rd term of the sequence.

(B) If the first and 7th terms of a geometric sequence are -1 and -64, respectively, find the 11th term of the sequence.

[10] **4.** For services rendered, an attorney accepts a 180 day note for $\$7,800$ at an annual simple interest rate of 8% from a client (both interest and principal are paid at the end of 180 days). Wishing to use her money sooner, the attorney sells the note to a third party for $\$7,904$ after 60 days. What annual simple interest rate will the third party receive for the investment?

[10] **5.** If \$500 is deposited each month into an account paying 5% compounded monthly for 1 year, find the total interest earned and the interest earned during first 6 months.

[10] **6.** Your friend is buying a $\$18,000$ certified pre-owned car with a down-payment of $\$5,000$ and he finances the remaining amount with a 3-year loan at 8.5% compounded monthly.

(A) What are his monthly payments? How much of interest in total is he paying?

(B) What is the remaining balance after 1 year?