NCORDIA UNIVERSITY
rtment of Mathematics & Statistics

	Number		Section(s)
matics	208/2		All
Examination	**Date**	**Time**	**Pages**
Midterm	October 2012	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.** A charter fishing company buys a new boat for \$224,000 and assumes that it will have a trade in value of \$115,200 after 16 years.

(A) Find a linear model for the depreciated value V of the boat t years after it was purchased.

(B) What is the depreciated value of the boat after 10 years?

(C) When will the depreciated value fall below \$100,000?

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

(A) $8^{x^2-3} = 2^{x+4}$

(B) $\ln 2 + \ln(x+2) - \ln(x-1) = 3\ln 2$

(C) $e^{4x^2-17x} = e^{-8-5x}$

(D) $\log_3(x^2 - x + 6) = 2$

PLEASE TURN OVER

[10] **3.**

(A) If the first and 15th terms of an arithmetic sequence are -5 and 23, respectively, find the 73rd term of the sequence.

(B) If the first and 10th terms of a geometric sequence are 4 and 40, respectively, find the 46th term of the sequence.

[10] **4.** Suppose that after buying a new car you decide to sell your old car to a friend. You accept a 270–day note for \$3,500 at 10% simple interest as payment. (Both principal and interest are paid at the end of 270 days.) Sixty days later you find that you need the money and sell the note to a third party for \$3,550. What annual interest rate will the third party receive for the investment?

[10] **5.** Beginning in January, a person plans to deposit \$100 at the end of each month into an account earning 6% compounded monthly. Each year taxes must be paid on the interest earned during that year. Find the interest earned during each year for the first 3 years.

[10] **6.** You are buying a \$10,000 second hand car with a down-payment of \$3,000 and you finance the remaining amount with a 3 year loan at 7.8% compounded weekly.

(A) What are your weekly payments? How much interest in total are you paying?

(B) What is the remaining balance after 2 years?