Concordia University

Department of Mathematics and Statistics

Course	**Number**	**Section**	
MATH	208	All	
Examination	**Date**	**Time**	**Page**
Mid Term	May 2011	1 Hour 30 minutes	2
Instructor	**Course Examiner**		**Marks**
D. Dryanov, L. Dube & U. Tiwari	D. Sen		60
Special Instructions:	**Answer ALL questions.**		

Formulae:

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

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[10] Q 1. A small company manufactures picnic tables. The weekly fixed cost is $\$1,200$ and the variable cost is \$45 per table. Find the total daily cost of producing x picnic tables. How many picnic tables can be produced for a total weekly cost of $\$4,800$?

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

(a) $4^{5x-x^2} = 4^{-6}$

(b) $16^{x-1} = 4^{1+x}$

(c) $3\log_b 2 + \frac{1}{2}\log_b 25 - \log_b 20 = \log_b x$

(d) $\log_a x + \log_a(x+1) = \log_a 6$

[10] Q 3. A person borrows \$3,600 and agrees to repay the loan in monthly installments over a period of 3 years. The agreement is to pay 1% of the unpaid balance each month for using the money and \$100 each month to reduce the loan. What is the total cost of the loan over the 3 years?

[10] Q 4. Parents have set up a sinking fund in order to have $\$140,000$ in 15 years for their children's college education. How much should be paid semiannually into an account paying 6.8% compounded semiannually?

[10] Q 5. American Express's online banking division offered a money market account with an annual percentage yield(APY) of 5.65%.

(a) If interest is compounded monthly, what is the equivalent annual nominal rate?

(b) If a company wishes to have $\$1,000,000$ in this account after 8 years, what equal deposit should be made each month?

[10] Q 6. If you buy a television set for \$800 and agree to pay for it in 18 equal monthly payments at 1.5% interest per month on the unpaid balance.

(a) How much are your payments?

(b) How much interest will you pay?

Good Luck!