

MATH 1300-201: EXAM 1 INFO/LOGISTICS/ADVICE

• INFO:

WHEN:	Friday (07/10) at 8:00am	DURATION:	110 mins
PROBLEM COUNT:	Six	BONUS COUNT:	Two

- TOPICS CANDIDATE FOR THE EXAM: (“PIRNOT” means the textbook, 5th ed.)
 - * PIRNOT 8.1 Converting Decimals \leftrightarrow Percents, Percent Change, Taxes
 - * PIRNOT 8.2: Simple Interest: Solving for I, P, r
 - * PIRNOT 8.2: Compound Interest: Solving for FV, P, r
 - * PIRNOT 8.3: Monthly Payments: Add-On Interest Mtd
 - * PIRNOT 8.3: Finance Charge: Unpaid Balance Mtd & Avg Daily Balance Mtd
 - * PIRNOT 8.4: Annuities: Solving for FV, R
 - * PIRNOT 8.5: Amortization: Solving for P, R , Building a few rows of an Amortization Schedule
 - * PIRNOT 8.6: Finding APR using a Table, Estimating APR using the Formula: $APR \approx \frac{2nr}{n+1}$
 - * **REMARK: Do not Memorize Formulas – A Formula Sheet will be provided (next page)**
- TOPICS CANDIDATE FOR BONUS QUESTIONS:
 - * PIRNOT 8.1: Calculating Income Tax from IRS Form 1040 (EXAMPLE 9, pg 384)
 - * ?????
 - * **REMARK: Maximum Bonus Points Possible = 20**
- TOPICS NOT COVERED AT ALL:
 - * PIRNOT 8.1: Consumer Price Index (EXAMPLE 10, pg 385)
 - * PIRNOT 8.2: Logarithms, Solving for n, t in Compound Interest (EXAMPLES 6-7, pg 394-395)
 - * PIRNOT 8.4: Multiplying/Dividing Polynomials (EXAMPLE 1, pg 409)
 - * PIRNOT 8.4: Solving for r, n, t in Annuities (EXAMPLE 4, pg 413)
 - * PIRNOT 8.5: Solving for r, n, t in Amortization
 - * PIRNOT 8.5: Refinancing a Loan (EXAMPLE 4, pg 422)

• LOGISTICS:

- All you need to bring are pencil(s), eraser(s), calculators(s) & your Raidercard.
- Clear your desk of everything except pencil(s), eraser(s), calculator(s).
- Backpacks are to placed at the front of the classroom.
- Formula Sheet (next page) will be provided.
- Books, notes, notecards NOT PERMITTED.
- Mobile devices (phones, tablets, PC’s, music, headphones, ...) are to be shut off and put away.
- Tissues will be furnished – for allergies, not for sobbing.
- When you turn in your exam, be prepared to show me your Raidercard if I don’t recognize you.
- If you ask to use the restroom during the exam, either hold it or turn in your exam for grading.

• ADVICE:

- Use the restroom before the exam, if needed.
- Do not be late – set your wake-up alarms (consider using your cellphone as a backup alarm).
- Review past homework, and perhaps even work some similar problems in the textbook.
- Review the slides.
- Know how the use all formulas on the provided Formula Sheet (next page)
- If you need more review, show up to extended office hours Thursday (07/09).
- **SHOW APPROPRIATE WORK!** Attempt bonus questions.

MATH 1300: EXAM 1 FORMULA SHEET

PIRNOT 8.1:

- $(\text{Percent Change}) = \frac{(\text{New Amount}) - (\text{Base Amount})}{(\text{Base Amount})}$
- $(\text{New Amount}) = (\text{Base Amount}) \times [1 + (\text{Percent Change})]$
- $(\text{Base Amount}) = \frac{(\text{New Amount})}{1 + (\text{Percent Change})}$

PIRNOT 8.2:

$I \equiv$ Amount of Simple Interest, $FV \equiv$ Future Value,
 $P \equiv$ Principal (Amount Borrowed), $r \equiv$ Annual Interest Rate,
 $m \equiv$ Frequency of Compounding per Year, $t \equiv$ Time or Loan Period (in **years**)

- Simple Interest: $I = Prt$
- Simple Interest: $FV = P(1 + rt)$
- Compound Interest: $FV = P \left(1 + \frac{r}{m}\right)^n$, where $n = mt$

PIRNOT 8.3:

- Add-On Interest Method: $(\text{Monthly Payment}) = \frac{P + I}{n}$, where $I = Prt$, $n \equiv$ # Payments, $r \equiv$ Annual Interest Rate
- Unpaid Balance Method: $(\text{Finance Charge for Next Month}) = (\text{Unpaid Balance}) \times r \times \left(\frac{1}{12} \text{ Year}\right)$

$$(\text{Unpaid Balance}) = \left(\begin{array}{c} \text{Last} \\ \text{Month's} \\ \text{Balance} \end{array} \right) + \left(\begin{array}{c} \text{Finance Charge} \\ \text{on Last Month's} \\ \text{Balance} \end{array} \right) + (\text{Purchases}) - (\text{Returns}) - (\text{Payments})$$

$$(\text{Finance Charge on Last Month's Balance}) = (\text{Last Month's Balance}) \times r \times \left(\frac{1}{12} \text{ Year}\right)$$

- Average Daily Balance Method: $(\text{Finance Charge for Next Month}) = (\text{Avg Daily Balance}) \times r \times \frac{(\# \text{ Days in Month})}{365}$

$$(\text{Avg Daily Balance}) = \frac{(\text{Total Daily Balance from Table})}{(\# \text{ Days in Month})}$$

PIRNOT 8.4:

$m \equiv$ # of Payments per Year, $t \equiv$ Time (in **years**)

- Annuity: $FV = \frac{mR}{r} \left[\left(1 + \frac{r}{m}\right)^n - 1 \right]$, where $R \equiv$ Payment into the Annuity each Compounding Period, $n = mt$

PIRNOT 8.5:

- Amortized Loan: $P \left(1 + \frac{r}{m}\right)^n = \frac{mR}{r} \left[\left(1 + \frac{r}{m}\right)^n - 1 \right]$
- Amortization Schedule: $(\text{Monthly Interest Rate}) = \frac{1}{12} \times (\text{Annual Interest Rate})$

$$\text{For each month: } \begin{cases} (\text{Interest Paid}) = (\text{Last Balance}) \times (\text{Monthly Interest Rate}) \times (1 \text{ Month}) \\ (\text{Monthly Payment}) - (\text{Interest Paid}) = (\text{Paid on Principal}) \\ (\text{Remaining Balance}) = (\text{Last Balance}) - (\text{Paid on Principal}) \end{cases}$$

- $(\text{Monthly Payment}) = (\text{Monthly Payment per } \$1000) \times \frac{(\text{Principal})}{1000}$ ← Use this formula when using provided table.

PIRNOT 8.6:

$FC \equiv$ Finance Charge, $FCPH \equiv$ Finance Charge per \$100 Financed, $n \equiv$ # Payments

- Computing APR using a Table (which will be provided):

STEP 1: Compute $\mathbf{FCPH} = \frac{(\text{Finance Charge})}{(\text{Amount Borrowed})} \times 100 = \frac{FC}{P} \times 100$

STEP 2: Find the **closest entry** in "n Payments" Row of provided table to **FCPH**

STEP 3: The **column heading of the table entry** is the APR

- Estimating APR using the Formula: $\text{APR} \approx \frac{2nr}{n + 1}$