Student Name:_____

Purdue ID:_____

MA 373 – Spring 2025
Quiz 3

MA 175 11:20 – 11:45 AM
Thursday, March 6th, 2025

INSTRUCTIONS

- Do not open this quiz until you are told to do so.
- There are 20 points possible from 4 problems, 2 worth 4 points and 2 worth 6 points.
- You have 25 minutes to complete this quiz.
- Be sure you have filled in your name and Purdue ID in the slots at the top of the page.
- Show all work to maximize partial credit.
- Be sure all cell phones are silenced and put away out of view. This policy applies to smart watches as well.
- Headphones are not permitted unless prior approval was granted by your instructor.
- Formula sheets are not permitted.
- You are only permitted to use calculator(s) from the following list:
  - BA II Plus
  - BA II Plus Professional
  - BA-35
  - TI–30Xa or TI–30XA (same model just different casing)
  - TI-30X II (IIS solar or IIB battery)
  - TI-30XS MultiView (or XB battery)
- When time expires, put your pencil down and close your exam. Failure to do so will result in automatic disqualification from obtaining University-Earned Credit.

PURDUE HONORS PLEDGE

"As a boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue."

STUDENT AGREEMENT

By signing below,

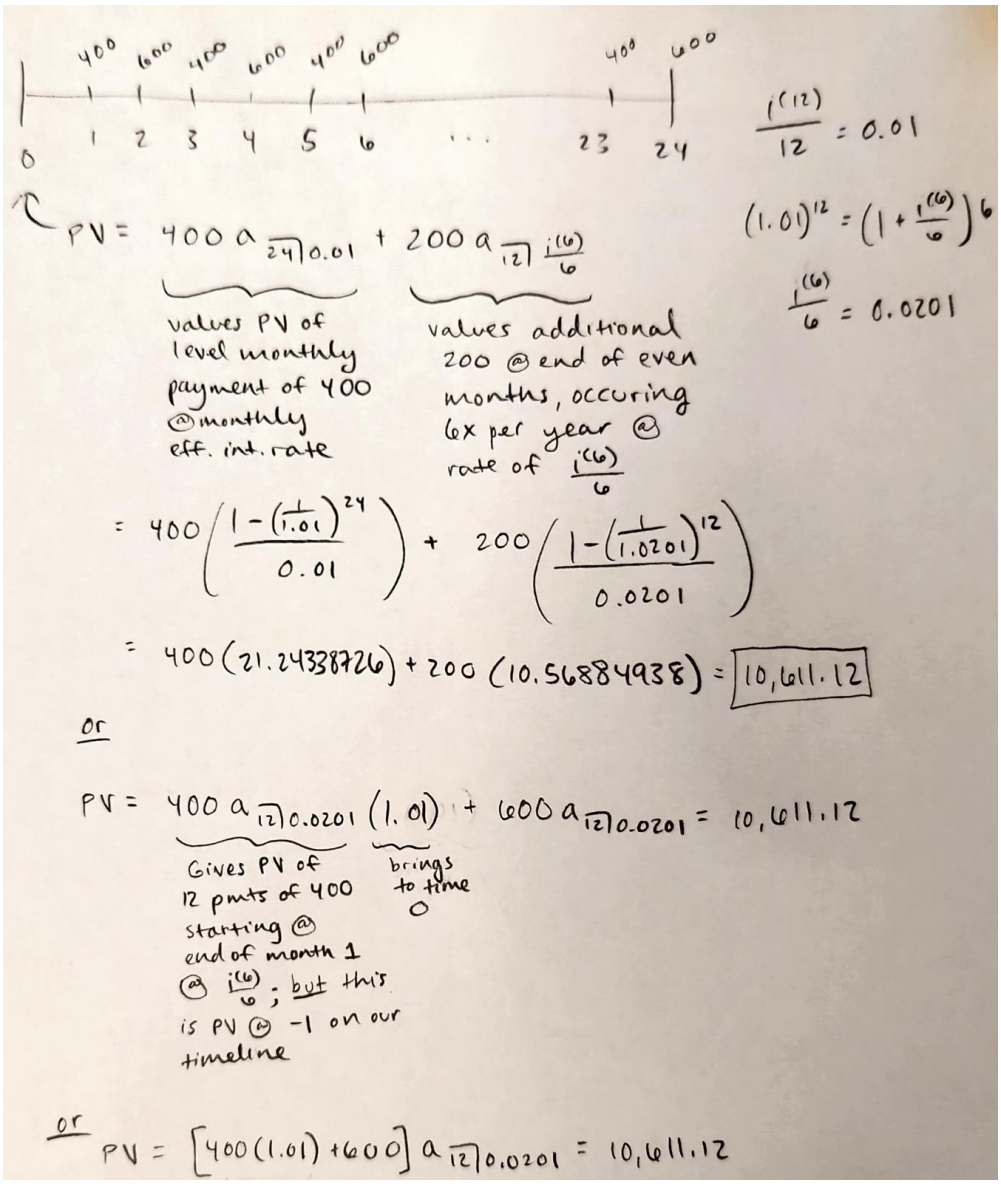
- I agree with the Purdue Honors Pledge stated above.
- I will not give or receive any assistance on this exam, and I will report any infractions of the honors pledge.
- I acknowledge that I only used calculator(s) from the above list.
- I am claiming all work in this exam as my own.

X_____

1. (4 points) You are receiving a monthly annuity that pays 400 at the end of the odd months (1, 3, 5, 7, 9, and 11), and 600 at the end of the even months (2, 4, 6, 8, 10, and 12) for 2 years.

   At a monthly effective interest rate of 1%, calculate the present value of this annuity to two decimal places.

   Solution:

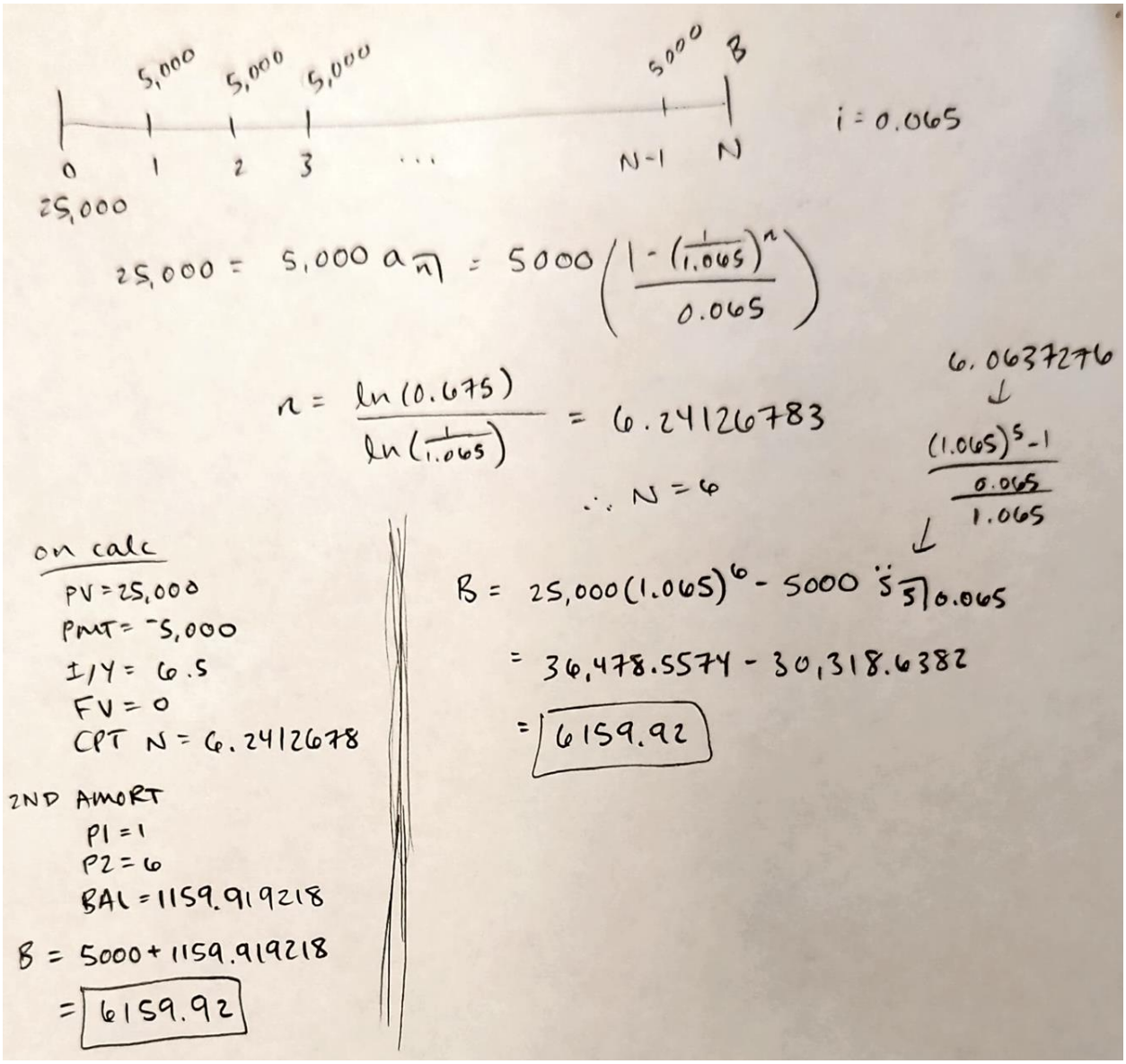


Points	
4	Correct setup for PV

2. (4 points) You take out a loan of 25,000 for tuition at an annual effective interest rate of 6.5%. You can choose to repay the loan with level annual payments of 5,000 plus a balloon payment, B.

   Calculate B to two decimal places.

   Solution:



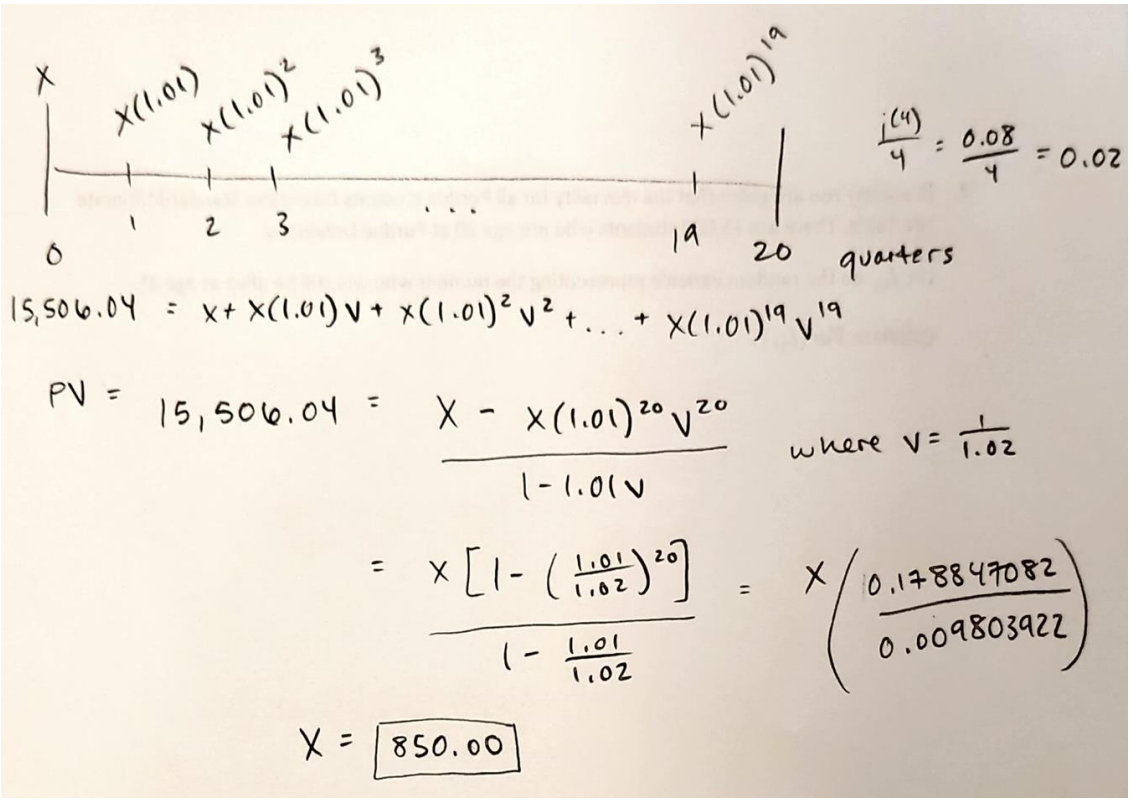
Points	
2	Correct setup to find N
2	Correct setup to find B

3. (6 points) You are given a quarterly stipend for housing as part of your new job that pays for 5 years. The stipend is an increasing annuity due that pays X today and increases by 1% each quarter to account for inflation. For example, the first payment at time 0 is X, the second payment at the end of the first quarter is $X(1.01)$, the third payment at the end of the second quarter is $X(1.01)^2$, etc.

   You are also given that the cost to the company to purchase this, the present value, is 15,506.04 and interest is 8% compounded quarterly.

   Calculate X to two decimal places.

   Solution:



Points	
1	Correct interest rate
5	Correct geometric series setup • 1 point for correct first term and overall equation of value structure • 2 points for "next after last" term in numerator • 2 points for correct ratio

4. (6 points) A Rutgers student had to take out a loan of 10,000 at an annual effective interest rate of 7% to pay a Purdue student money that they owe them for betting on Tuesday night's game.

   What song did the Purdue student choose to celebrate their new fortune?

   (In other words, this is a freebie. **List a song title and artist for a song that you've been listening to lately** and I'll put together a class playlist. Don't worry about keeping it G-rated for me – I want to know what you really listen to.)

Additional Rubric Details

***Math Errors*: If all setup is correct in any given problem, but numerical answer is incorrect, 4-point problems receive a 0.5-point deduction, 6-point problems receive a 1-point deduction (unless "typo", then max -0.5)**

***Calculation Incomplete*: If all setup correct but did not compute the final answer, 4-point problems receive a 1-point deduction, 6-point problems receive a 1.5-point deduction**