

Math 312 - Practice Quiz # 2 - Fall 2024

1. (1 point each) Please circle either T (true) or F (false) for each of the below statements.

- A) T F  $20\ddot{a}_{\infty|0.01}$  represents the value of a perpetuity due at the time one period before the 1<sup>st</sup> payment.
- B) T F  $50\ddot{s}_{\overline{12}|0.01}$  represents the accumulated value of 12 payments of 50, at an interest rate of 1% per period, one period after the final payment.
- C) T F For the same interest rate  $i$  per period,  $\ddot{s}_{\overline{n}|i}$  and  $a_{\overline{n}|i}$  cannot be related mathematically.
- D) T F The expression  $20s_{\overline{40}|0.05}/\nu$  represents the accumulated value of an annuity, one period after the time of the final payment of 20, where 40 payments have been made and an interest rate of 5% has been applied per period.

2. (6 points) Jenn's goal for saving for the future is \$500,000. She can invest in an account that has a nominal interest rate of 9% compounded monthly.

- A) (4 points) How much should she invest each month if she is to reach her investment goal at the end of 30 years on the date of the last payment?

- B) (2 points) How much does the amount she should invest each month *increase* if she waits 10 years to start saving?

3. (5 points) A 10-year annuity-immediate pays 50 quarterly for the first 5 years and 100 monthly for the last 5 years. The annuity earns at a nominal annual rate of 6% compounded quarterly. What is the present value of this annuity?

4. (5 points) To accumulate 8000 at the end of  $3n$  years, deposits of 98 are made at the end of each of the first  $n$  years and 196 at the end of each of the next  $2n$  years. The annual effective interest rate is  $i$ . You are given  $(1 + i)^n = 2$ . Find  $i$ .

C) 11.25%

C) 11.75%

C) 12.25%

C) 12.75%

C) 13.25%