Fixed Income
Problem set on dynamic duration hedging of an annuity.

Short Answer questions. Be concise, precise and direct.

The yield curve is flat at 3% continuously compounded.

A bank customer has saved $1.3 million in his retirement account, and is considering annuitizing this asset. He is 67 years old and would like a 25-year annuity with semi-annual payments.

1. What is the size of the semi-annual payments under current market conditions?

2. What is the duration of this annuity? *(Quiz note: There is no way to compute this on a quiz, so I would give it to you, and then you would use it in the following questions.)*

3. Construct a duration-matched hedge portfolio using a new 30-year T-Bond and a 6-month bill. The T-Bond has a coupon of 3%. *(Quiz note: For a quiz this could be a STRIPS. If it's a bond –as here– I would have to tell you the price and the duration of the bond.)*

4. Show all the cash flows on the position at time 0 and time 0.5 assuming that in 6 months, the yield curve is flat at 3.3% cc.

5. Rebalance the hedge portfolio after six months.