ECO 301: Money and Banking
Week 7 Homework: Interest Rates and Rates of Return

Directions: Provide written answers for the following questions and prompts. **Show all of your work for present-value calculations, including formulas and values used for variables and time periods.**

1. Suppose you purchase a new car and finance it with a $25,000 fixed-payment loan with monthly payments over 6 years and at an interest rate of 7% compounded monthly. How much are your monthly payments?

2. Consider a coupon bond purchased on the secondary market with annual coupon payments, a face value of $1,000, 10 years until maturity, and an annual coupon rate of 5%. If the current interest rate is 5.5%, what is the present value of the bond?

3. Suppose you obtain a $28,000 fixed-payment student loan today to pay for college. Suppose you have an arrangement with the bank so that you do not have to make your first payment until 2 years from now (gives you time to finish college and find a good-paying career). Suppose the maturity date is 10 years from your first payment and the interest rate on the loan is 6%, compounded monthly. What are your monthly payments?

4. Suppose a 10-year government zero-coupon discount bond with face value $1000 is sold for $685.

   (a) What is the annualized yield to maturity?

(b) In equilibrium, Treasury bonds are sold for a price such that the annualized yield to maturity is equal to the prevailing market interest rate for similar assets (similar risk, same present value cash flows, same maturity, etc.). Suppose next year (9 years until maturity) interest rates are 6%. Is this an increase or decrease in interest rates? What will be the new price of the bond? Did the bond price increase or decrease?

(c) In part (b) above, suppose you sold the bond at the end of the first year. What was your capital gain / loss?

(d) If financial investors expect an increase in interest rates, would they have a lower or higher demand for long-term, fixed-interest rate, bonds? Explain.