Today:
1. Increasing and decreasing annuities
2. Continuous annuities

In Class Exercises:
1. A perpetuity-immediate pays 100 per year. Immediately after the fifth payment, the perpetuity is exchanged for a 25-year annuity-immediate that will pay X at the end of the first year. Each subsequent annual payment will be 8% greater than the preceding payment. The annual effective rate of interest is 8%. Calculate X.

2. Mike buys a perpetuity-immediate with varying annual payments. During the first 5 years, the payment is constant and equal to 10. Beginning in year 6, the payments start to increase. For year 6 and all future years, the current year's payment is K% larger than the previous year’s payment. At an annual effective interest rate of 9.2%, the perpetuity has a present value of 167.50. Calculate K, given K < 9.2.
3. Olga buys a 5-year increasing annuity for X. Olga will receive 2 at the end of the first month, 4 at the end of the second month, and for each month thereafter the payment increases by 2. The nominal interest rate is 9% convertible quarterly. Calculate X.

4. Jake inherits a perpetuity that will pay him $10,000 at the end of the first year increasing by $10,000 per year until a payment of $150,000 is made at the end of the fifteenth year. Payments remain level after the fifteenth year at $150,000 per year. Determine the present value of this perpetuity, assuming a 7.5% annual interest rate.