

MATH 210 THEORY OF INTEREST SPRING 2016
PROFESSOR WANG

Homework 3 (max. points = 10)
Due at the beginning of class on Thursday, February 11, 2016

You are encouraged to work on these problems in groups of no more than 4. However, each student must hand in her/his own answer sheet. Please show your work enough to show that you understand how to do the problem -and circle your final answer. Full credit can only be given if the answer and approach are appropriate. Please give answers to two decimal places -e.g., xx.xx% and \$xx,xxx.xx.

Section 1.6. (3)

Section 1.8. (1)

Section 1.9. (7)

Section 1.10. (1)

Section 1.11. (1)

Section 3.2. (2)

Additional Problems.

1. Andy makes a deposit into a bank account which credits interest at a nominal interest rate of 10% per annum, convertible semiannually. At the same time, Fabio deposits 1000 into a different bank account, which is credited with simple interest. At the end of 5 years, the forces of interest on the two accounts are equal, and Fabio's account has accumulated to Z . Determine Z .

2. An annuity pays \$10,000 every year for 25 years. Find the accumulated value of this annuity 3 years after the last payment. Assume that the effective annual interest rate is 10%.

3. David can receive one of the following two payment streams:

- (i) 100 at time 0, 200 at time n , and 300 at time $2n$
- (ii) 600 at time 10

At an annual effective interest rate of i , the present values of the two streams are equal. Given $v^n = 0.76$, determine i .

4. Suppose you deposit \$15,000 at the end of each of the next 30 years into a retirement account. Immediately after your last deposit, you take the entire accumulated value in your account and purchase a 20-year annuity, which will pay you Y at the beginning of each year for 20 years. The price of this 20-year annuity is equal to the present value (at the time you purchase the annuity) of the 20 annual cash flows. The effective annual interest rate throughout the entire 50-year period is 5%. Find Y .