

**Mth 21, Homework 9 on sections 5.1, 5.2**

Due by Wed, Nov 15.

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Please use lots of space and explain your answers, showing clearly any work you had to do. Each question is worth 3 points.

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- (1) Find the simple interest earned on \$3400 invested for 5 years at 2%.  
(Hint: use  $I = Prt$  and your answer should be close to \$300.)
- (2) If \$10 000 is invested for 8 years earning 4% simple interest, what is it worth at the end?  
(Hint: use  $FV = P + I = P(1 + rt)$ .)
- (3) Your credit card charges 20% interest. For a billing cycle Apr 15 through May 14 you have a balance of \$120 at the beginning and pay off \$60 on Apr 20. On May 5 you make a \$200 purchase on the card.  
Use these steps to compute the card's finance charge:
- (a) From Apr 15 through Apr 19 the balance is \$120 (that's 5 days). Find the balances for Apr 20 through May 4 and May 5 through May 14, and how many days in each.
  - (b) Use part (a) to find  $P$ , the average daily balance. (Near \$140.)
  - (c) The finance charge is the simple interest on this. (A bit more than \$2.)
- (4) Suppose \$5000 earns 6% annual interest, compounded monthly for 10 years.
- (a) Compute the periodic rate  $i$
  - (b) Compute the total number of periods  $n$
  - (c) Use  $FV = P(1 + i)^n$  to show that the value at the end is nearly double.
- (5) How much money should be invested in a savings account now if it is to be worth \$10 000 in 8 years? The account earns 5% interest compounded weekly.  
(Hint: explain why we need to solve  $10\,000 = P(1 + 0.05/52)^{416}$ .)
- (6) If an account earns 7.3% interest compounded daily, what is its annual yield? Give your answer as a percent.  
(Hint: in other words, what annual simple interest rate is it equivalent to? Solve  $1 + r = (1 + i)^n$  to find  $r$ .)

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If you get stuck on a question or aren't sure if you understand it:

- Go over the relevant class notes and section in the textbook.
- Check if you get the right answer for a similar odd-numbered question in the textbook (answers at the back of the book).
- Ask me about it after class.
- Come to my office hours: Mon 11:30 - 12:30, Wed 11:30 - 12:30 in CP 317.
- Go to the Math Tutorial Lab in-person in CP 303 or online.