

Homework 11 - Due 11 November 2011

Math 1140 Financial Mathematics

Collaboration Policy: You are encouraged to collaborate with your fellow students on this homework. You must turn in individual solutions and you are not allowed to use any written, typed, or recorded artifact from the meeting with your classmates. You are allowed to use any resources **except for the Appendix D in the textbook (the solutions to the odd-numbered exercises).**

Pledge: On my honor, I pledge that I have neither given nor received unauthorized aid on this assignment.

Name(use block letters):

Signature:

For full credit you must show your work and your calculations for all the problems. I am not asking for the presentation of silly arithmetic!

Problem 1

To secure a 20-year 9%(12) loan on their \$200,000 home, a couple must pay 10% down and 3.2 points which will be added to the loan.

- Find the amount of the loan.
- Find the payment.
- Find the actual APR.

Problem 2

To secure a 15-year 10.3%(12) loan on his \$300,000 home, Albert must pay 20% down and 2 points.

- Find the amount of the loan.
- Find the payment.
- Find the actual APR.

Problem 3

Assuming points are financed over the term of the loan, would you do better with a 20-year 6%(12) \$100,000 loan or a 20-year 5.8%(12) \$100,000 loan with 2 points? Why is no loan value needed to make the comparison?

Problem 4

Assuming points are financed over the term of the loan, would you do better with a 25-year 8%(12) \$200,000 loan with 2 points or a 25-year 7.9%(12) \$200,000 loan with 4 points?

Problem 5

Find the outstanding balance at the end of 6 years for a \$55,600 loan financed at 7.5%(12) for 15 years.

Problem 6

A home costing \$115,800 was financed over 30 years with 20% down at 8.8%(12) and 1.25 points. If the points are added to the loan, what is the outstanding balance after 16 years and 8 months?

Problem 7

To secure a 20-year 9%(12) loan on their \$200,000 home, a couple must pay 10% down and 3.2 points that will be added to the loan.

- Find the outstanding balance after 5 years.
- If they can refinance after 5 years at 7%(12) with no points, keeping the same total term, what would their new payment be?
- Find the total savings in b because refinancing.
- If they can refinance after 5 years at 7%(12) with no points, changing the new term to 10 years, what would their new payment be?
- Find the total savings in d because refinancing.

Problem Bonus 1

If a 15-year loan for \$40,000 is financed at 8%(12) with 1.75 points, how many points would a person have to pay to create an equivalent APR on a loan that is financed at 7.5%(12)?

Problem Bonus 2

Compare the outstanding balance calculated using the prospective and retrospective method. Consider a loan of P dollars for n months with interest rate i per month. Compare the outstanding balance after the k^{th} payment using the prospective method with the outstanding balance after the k^{th} payment using the retrospective method.

Problem Bonus 3

The Jackson family has a loan for \$82,000 financed at 8%(12) for 30 years. At the end of the seventh year they start paying an additional \$70 per month toward the principal of the loan. If they continue to do this what will the new term be and what will their last payment be?

Problem Bonus 4

Use outstanding balance to determine how much of the k^{th} payment of a mortgage goes to the interest.

Problem Bonus 5

A schoolteacher arranges for his \$50,000 home mortgage to be paid with 9 payments each year from October 1 through June 1, but no payments during the 3 months of the summer. Find the payment if this is a 15-year mortgage at 9%(12).