

Finance 435
Homework Assignment #1
Mortgage Calculations

Problem 1: A loan was made 10 years ago with an original balance of \$1,000,000.00 at a fixed interest rate of 8.00% with equal monthly payments for 30 years.

- A. How much is the monthly payment?
- B. What is the balance today?
- C. What will the balance be at the end of 5 more years?
- D. When will the balance be paid down to 50% of the original balance?
- E. How much would the borrower have to pay each month from now on in order to repay the remaining balance in 10 more years?

Problem 2: An adjustable rate loan has a 2.50% margin with change caps of 2% per year and a life cap of 5%. The start rate is 5%. The interest rate changes every 12 months. Calculate the following for a \$1,000,000 loan at these terms.

- A. What is the payment for the first year?
- B. What is the loan balance at the end of the first year?
- C. Calculate the worst case scenario of payments for the first 4 years of this loan. That means you will assume that the interest rate increases by the maximum amount each year.
- D. When the interest rate is adjusted for the first year, the loan index is 5.25%. What interest rate will the borrower pay during the second year of this loan?
- E. When the interest rate is adjusted for the first year, the loan index is 3.75%. What interest rate will the borrower pay during the second year of this loan?

Problem 3: A lender makes a loan at Hybrid Option ARM at a fixed rate of 6.50% interest for 7 years. The minimum required payment is calculated as 60% of the fully amortized payment using a 30 year repayment term. The loan will recast if the balance reaches 115% of the original amount. If the balance is recast, the borrower will be required to pay the remaining balance over the remaining term at the full interest rate. The minimum monthly payment is \$10,000.00 per month.

- A. What is the original amount of the loan?
- B. If the borrower makes the minimum monthly payments, when will the loan recast?
- C. What will the new payment be for the month after the loan is recast?
- D. What payment would be required so that the borrower would not hit the recast until the end of 7 years (the fixed interest rate period of this loan.)?