

Fin 5413 Midterm Exam Review Questions

The exam will be entirely multiple choice questions, almost all calculation based. The exam is problem based with a number of related calculations required for each question as noted below.
Total points: 72

Chapter 3: Know how to do TVM problems, understanding APR, EAY, compounding period.

- 2 problems worth 9 points total.

Chapter 4. Know the basics of FRM, GPM, and CAM mortgages. Know how to compute FTLAPR and the yield to lender, both as an APR and EAY.

- 3 Problems worth 25 points

Chapter 5. Know the mechanics of ARMS, PLAMS, and SAMS.

- 2 Problems worth 20 points

Chapter 6. Values and costs of real estate finance decisions:

- 3 problems worth 16 points.

The problems will be similar to those assigned as homework. Below are some additional practice problems that you should see are similar to those you did for homework.

Problem 1. Mr. Smith is trying to decide between a CAM and CPM mortgage. For a \$240,000, 20 year loan at 9%, what is the payment, amount to principal, amount to interest and remaining balance for the 88th payment under each loan choice scenario.

88 th PMT	CAM	CPM
Payment	2,147.50	2,159.34
Principal	1,000.00	688.38
Interest	1,147.50	1,470.96
Balance	152,000.00	195,440.18

Problem 2. Comprehensive review problem: Pat has just signed an earnest money agreement to purchase a home in Alamo Heights for \$850,000. Pat has applied for an 80% LTV, 30 loan with an interest rate of 7.25% with 3 points. Assume the house appraises for at least the purchase price.

- How much will the lender disburse 659600
- What will the monthly principal and interest payment be? 4638.80
- How much will Pat pay into interest during the 3rd year of the loan? 48060.52
- How much will Pat pay into principal in the 4th year? 8175.17
- For Pat's 37th payment, how much will go to principal? 658.92
- For Pat's 37th payment, how much will go to interest? 3979.88
- What is Pat's loan balance after 36 months? 658738.69
- What is the effective interest cost if Pat keeps the loan for its full term (APR)? 7.5592%
- What is the effective interest cost if Pat keeps the loan for its full term (EAR)? 7.8267%
- What is the FTLAPR that must be reported on this loan (rounded to 1/8%) 7.625%
- If Pat pays off the loan after 36 months, what is the yield to lender as an EAR? 8.7320%
- If the lender wants an effective yield (APR) of 7.75%, and believes Pat will keep the loan for 30 years, how many points should be charged? 4.78
- What FLTAPR will the lender report? 7.75%
- If the lender wants an effective yield (APR) of 7.75%, and believes that Pat will keep the loan for 4 years, how many points should it charge? 1.68
- Under this scenario, what FLTAPR will the lender report? 7.375

Modified Loan Terms: The loan has a 2% prepayment penalty if the loan is paid off within 7 years (other terms as for original problem)

What is the yield to lender if the loan is held for 4 years (EAR)? 8.9106%

What would be reported as FTLAPR? 7.625%

Problem 3. For a mortgage of \$200,000 at 7% that starts with a payment of 1100 per month and increases by 8% each anniversary date, how much interest will be paid in year 2, and what is the balance at the end of year 2? Interest paid in year 2 = 14,256.00, Balance end of year 2 = 200,621.55

Problem A. Use the following data for the next 6 questions. A PLAM mortgage is made with the following terms. Amount 160,000. Initial interest rate 3%. Term 15 years. Points: 4. Inflation is 14 percent the first year and 9 percent the second year. Payments are adjusted at each anniversary.

1. What is the initial payment? 1,104.93
2. How much is paid into interest the first year? 4,682.71
3. What is the beginning loan balance for year 2? 172,622.85
4. What is the payment during year 2? 1259.62
5. What is the mortgage payoff at the end of 2 years? 177,177.68
6. What is the yield to lender (APR) if the loan is paid off after 2 years? 15.77%

Problem B. Use the following data for the next 14 questions. You have applied for a \$225,000, 30-year ARM mortgage with the features noted below. Payments and interest rates are adjusted each year. You will stay in the house for three years.

Initial Interest rate = X.XXX% (In effect for first year, i.e. Year 1)

Index = XXXXX

Margin = X.XXX%

Interest Rate Cap: XXX/XXX

Payment Cap: XX % up or down each year

Negative Amortization: XXXXX

Discount Points = X.X

Assume the index changes over time as noted in the table below.

Year	Index	Int. Rate Charged	Monthly Payment	Amount Paid to Interest	EOY Balance
1	N/A				
2	y.yyy%				
3	q.qqq%				

The first 12 questions are to fill in the blanks in the table above

13. What is the yield to the lender, expressed as an APR?

14. What is the yield to the lender, expressed as an EAY?

Example B1:

Initial Interest rate = 3.50% (In effect for first year, i.e. Year 1)
 Index = 4.18 Margin = 2.000%
 Interest Rate Cap: None Payment Cap: None
 Negative Amortization: N/A Discount Points = 1.5

Assume the index changes over time as noted in the table below.

Year	Index	Int. Rate Charged	Monthly Payment	Amount Paid to Interest	EOY Balance
1	N/A	3.5	1,010.35	7,806.18	220,681.98
2	6.25%	8.25	1,671.19	18,134.75	218,762.45
3	8.75%	10.75	2,062.80	23,454.16	217,463.01

The first 12 questions are to fill in the blanks in the table above

13. What is the yield to the lender, expressed as an APR? 7.86%

14. What is the yield to the lender, expressed as an EAY? 8.15%

Example B2:

Initial Interest rate = 3.50% (In effect for first year, i.e. Year 1)
 Index = 4.18 Margin = 2.500%
 Interest Rate Cap: 2%/6% Payment Cap: None
 Negative Amortization: N/A Discount Points = 3.5

Assume the index changes over time as noted in the table below.

Year	Index	Int. Rate Charged	Monthly Payment	Amount Paid to Interest	EOY Balance
1	N/A	3.50	1,010.35	7,806.18	220,681.98
2	6.25%	5.50	1,270.12	12,058.06	217,498.57
3	8.75%	7.50	1,550.48	16,231.90	215,124.71

The first 12 questions are to fill in the blanks in the table above

13. What is the yield to the lender, expressed as an APR? 6.71

14. What is the yield to the lender, expressed as an EAY? 6.92

Example B3:

Initial Interest rate = 3.50% (In effect for first year, i.e. Year 1)
 Index = 4.18 Margin = 2.750%
 Interest Rate Cap: None Payment Cap: 7.5% per year
 Negative Amortization: Allowed Discount Points = 2.5

Assume the index changes over time as noted in the table below.

Year	Index	Int. Rate Charged	Monthly Payment	Amount Paid to Interest	EOY Balance
1	N/A	3.5	1,010.35	7,806.18	220,681.98
2	6.25%	9.00	1,086.13	13,033.56	227,798.59
3	8.75%	11.50	1,167.59	33,976.72	240,647.62

The first 12 questions are to fill in the blanks in the table above

13. What is the yield to the lender, expressed as an APR? 8.76%

14. What is the yield to the lender, expressed as an EAY? 9.13

Problem C. Use the following data for the next 4 questions. A SAM mortgage is made for 155,000 for a 30-year term at 6% with 3 points. The lender will receive 40% of any increase in the property value over the next three years. The property is currently valued at 175,000. Assume the property increases in value at 9% per year.

1. What is the payment during the second year of this mortgage? 929.30
2. Not including the appreciation split, what is the loan balance after 3 years? 148,930.42
3. After 3 years, what is the lender share of the house appreciation? 20,652.03
4. What is the yield to lender (APR) if the borrower repays after 3 years? 11.03%

Problem D. Use the following data for the next 7 questions. A borrower had contracted to purchase a house for \$200,000 and can obtain an 80% loan with a 30 year term at 5%, or a 90% loan with a 30 year term at 5.5%.

1. What is the payment on the 80% loan? 858.91
2. What is the balance after 3 years on the 80% loan? 152,549.93
3. What is the payment on the 90% loan? 1022.02
4. What is the balance after 3 years on the 90% loan? 172,307.68
5. What is the incremental cost (expressed as an APR) of the top 10% of the second loan (assume you stay 30 years)? 9.15%
6. What is the incremental cost (expressed as an APR) of the top 10% of the second loan (assume you stay 3 years)? 9.44%
7. For the previous question, what is the incremental cost (expressed as an APR) if you were charged 3 points on the 90% loan. 21.85%

Problem E. Use the following data for the next 8 questions. You are considering which financing alternative to choose for your proposed house purchase (250,000 house). You have \$12,500 available for a down payment. Option A: Get a 95% loan at 6.5%, with 2 points. Option B. Get an 80% loan for 5%, (with no points) and a second mortgage at 8% (with 3 points) for your remaining needs. All loans have a 15 year term.

1. What is the payment for Option A? 2,068.88
2. What is the loan balance after 4 years for Option A? 194,740.74
3. What is the combined payment on Option B? 1,939.96
4. What is the combined loan balance after 4 years for Option B? 191,724.55
5. What is the cost of Option A (expressed as an APR) if you stay 15 years? 6.82%
6. What is the cost of Option B (expressed as an APR) if you stay 15 years? 5.57%
7. What is the cost of Option A (expressed as an APR) if you stay 4 years? 7.13%
8. What is the cost of Option B (expressed as an APR) if you stay 4 years? 5.63%

Problem F. Use the following data for the next 8 questions. You are considering refinancing your current mortgage that you took out 4 years ago (Note amount \$160,000, term 30 yr, note rate = 6%). You can refinance to a 5% loan (term 30 years) at a cost of 2.5 points. Because you have no savings, you will add the refinancing costs to your current loan. You expect you will keep your new loan for 3 years.

1. What is your current loan payment? 959.28
2. What is your current loan balance? 151,383.30
3. If you do not refinance, what will your balance be 3 years from now? 143423.14
4. If you refinance, what will your starting note balance be? (Note: Example done in class was approximately correct; the answer here is the exact amount). 155,264.92 (= 151,383.30/0.975)
5. If you refinance, what will your new payment be? 833.50
6. How much will you save in payments each month if you refinance? 125.78
7. If you refinance, how much higher will your loan balance be 3 years from now? 4,611.86
8. If you invest your monthly savings at 4%, how much will you have 3 years from now, over and above the higher loan balance you face 3 years from now? 190.62

Problem G. Use the following data for the next 5 questions. Secondary Market Purchasing Company is considering purchasing your mortgage from the financial institution that currently holds it. You took out a 230,000, 15 year, 6.5% mortgage two years ago.

1. What is your current loan payment? 2,003.55
2. What is your current balance? 210,635.69
3. What will your balance be 4 years from now? 163,494.31
4. If SMPC wants a 7% return on its purchase, and believes you will keep the mortgage full term, how much should SMPC pay for your loan? 204,846.43
5. If SMPC thinks you will pay off your loan 4 years from now, how much should it pay given that it wants a 7% return on its purchase. 207,335.56

Problem H. Use the following data for the next 6 questions. You have a choice between two identical townhouses in the same complex. You have \$30000 available for a down payment. Home A is priced at \$150,000. You can get a conforming mortgage with a 20 year term for 80% of its value at 6.5%. Home B is priced at \$155,000 and you can assume the existing balance of \$100,000 at 5% (with 20 years remaining) and get a second mortgage at 8%, also with a 20 year term.

1. What is the payment for Home A? 894.69
2. What will your balance be after 5 years for Home A? 102706.78
3. What is the payment (combined) for Home B? 869.07
4. What will your balance (combined) be after 5 years for Home B? 105335.94
5. If you stay for 20 years, which home has the lowest cost? Home B due to lower payments
6. If you stay for 5 years, at what rate must you invest your monthly savings to recover your higher loan balance at that time? 20.30%

Problem I. Use the following data for the next 6 questions. A homebuilder is offering \$150,000 loans for his homes at 5% for 15 years. The market rate is 5.5% for 15 years.

1. What is the payment on the builder's loan? 1,186.09
2. What is the balance after 5 years on the builder's loan? 111,835.65
3. What is the payment on a market rate mortgage? 1,225.63
4. What is the balance after 5 years on the market rate mortgage? 112,933.92
5. If the builder believes you would take his mortgage for the entire 15 year term, how much of a price premium does he have to build into his house price? 4,826.92
6. If the builder believes you would take his mortgage for a 5 year period, how much of a price premium does he have to build into his house price? 2,898.97

Problem J. Use the following data for the next 3 questions. In response to increasing interest rates, a homebuilder has introduced a 30-20-10 program in which she will reduce your mortgage payment by 30% the first year, 20% the second year, and 10% the third year. You are seeking a \$200,000, 30 year loan at 6%.

1. What will your payment be with no payment subsidy? 1,199.10
2. What will your first year payment be with the subsidy? 839.37
3. What is the PV of the subsidy you receive during year 3? 1,236.05
3. If the bank issuing the loans requires a 6% return on the loan, how much must the builder pay the bank as a single payment at loan closing to compensate the bank for the lower payments? 8,040.30
4. What is your cost for the loan (expressed as an EAR) if you keep the loan the full term? 5.78%

Problem K. Use the following data for the next 7 questions. An appraiser is looking for comparable sales and finds a house that recently sold for \$250000. She determines that the buyer was able to assume the seller's mortgage which had a 5.5% interest rate. The balance at the time of the sale was \$190,000 with 15 years remaining. The current market rate for a 15 year mortgage of that size is 6.5%.

1. What is the payment on the mortgage that was assumed? 1,552.46
2. What is the balance on this loan 6 years from now? 132,011.67
3. What is the payment on new market rate mortgage? 1,655.10
4. What is the balance on a new market rate mortgage 6 years from now? 135,061.12
5. Assuming the loan is held to term, what is the value of assuming the loan? 11,782.70
6. What is the cash equivalent value of the house on which the loan was assumed, projecting that the loan was held to term? 238,217.30
7. What is the cash equivalent value of the house on which the loan was assumed, projecting that the loan was held for 6 years? 241,827.26