Math 1030-002 – Summer 2001
Extra Credit 5 Due: Monday, June 25

The following problems are each worth 5 points. You may only turn in one of these problems for credit. In order to get ANY credit, your answer must be accurate and written neatly in full sentences that completely explain your reasoning. You are encouraged to work with other people in the class on this problem, but your write-up must be your own. If I feel that your solution is not sufficient, I will return it to you with comments and give you an opportunity to re-write it. Feel free to ask me questions at any time, of course!

The first problem will give you practice using the equations covered on Quiz 5. The second problem asks you to research a variety of loan options and asks you to explain the financial situations that would cause a person to prefer each type. I am expecting that your solution should be 1–3 pages long.

Note: I will not accept late extra credit work!

Problem 1: *(Loan Payment Formula)*

Two years ago, Ranjit and Amrita took out a 30 year, $80,000 mortgage with an APR of 9.8%, no points, and no closing costs. This mortgage has no associated prepayment penalties.

How much were their monthly payments for the past two years?

Complete the following table to determine how much money they still owe on their mortgage.

	Amount Owed	Interest Charged	Payment	New Amount Owed
Payment 1	$80,000	$653.33		
Payment 2				
Payment 3				
⋮	⋮	⋮	⋮	⋮

The "Amount Owed" column will always match the "New Amount Owed" from the previous row. You can find the "Interest Charged" by multiplying the current amount owed by $\frac{1}{12}$ of the APR (expressed as a decimal). The "Payment" column will always be the same and will be equal to the amount you calculated for their monthly payments using the loan payment formula. To find the "New Amount Owed" entry you must add the Interest Charged and subtract the Payment from the current Amount Owed.

Ranjit and Amrita earned $5000 more than they had anticipated this year. Their first thought was to make a lump payment towards their mortgage, thereby reducing the total amount of interest they will have to pay in the long run.

How much would they save in the long run if they follow this plan? To do this, follow these steps.

1. Find the amount that they will owe after making the $5000 lump payment.
2. Figure out how long it will take Ranjit and Amrita to pay off the loan if they keep making the same monthly payments as they have been for the past two years. You should use the loan payment formula with the amount they still owe for P. Use guess and check or logs to find the number of years it will take them to finish paying off the loan.
3. Find the amount they will spend in payments before the loan is paid off. Adding this number to the $5000 lump payment will give you the total additional money that they will spend before their current debt is finally paid off.
4. Figure out how much money they would have spent if they followed the original plan and took 28 more years to pay off the mortgage.
5. Compute the amount they save in the long run by making the $5000 lump payment.

As of June 17, 2001, InternetMortgage.com (FDIC insured) is offering a 30-year fixed rate mortgage with an APR of 6.9%. They require a down payment of 5% of the loan amount (which will go towards paying off the loan). They

do not charge an application fee, but they require a fee of 1.25 points up front to issue the mortgage. (This fee does not go towards paying off the loan.)

If Amrita and Ranjit decide to refinance their house with this mortgage, will they be able to pay for the up front costs with their $5000 surplus or will they need to come up with more money?

Will refinancing save Ranjit and Amrita more money than simply making the lump payment? To do this, follow these steps.

1. Determine how much money Amrita and Ranjit will really be borrowing after they make the 5% down payment.
2. Use this adjusted loan amount as the principal in the loan payment formula and determine the monthly payment amounts for this mortgage.
3. Determine how much money they would spend on this mortgage over the 30 year loan period.
4. Comment on how the refinancing option compares with their other options.

Problem 2: *(Loan Options)*

In this problem you will choose 4 different loans to investigate. Begin by choosing an amount that you would hypothetically like to borrow.

Some of the types of loans you might choose from include:

- Credit Card (Cash Advance)
- Paycheck Advance Service
- Student Loans
- Home Equity Loans
- Personal Bank Loans

You are also free to choose from other types of loan options.

For each loan option, explain the average or typical Annual Percentage Rates, Method they use for Compounding Interest, Application Fees, Finance Charges, Down Payments, Penalties, and Rules and Restrictions.

Compare the four different plans. What are the advantages and disadvantages of each one? Under what financial circumstances might a person choose each one?

Report the sources of all of your information.