MATH 120 Section 3.4

Annuity Present Value and Amortization

The present value (PV) of an ordinary annuity is the amount of money you would need to invest today to receive payments (PMT) in the future. Example: How much do you need to invest today (PV) in order to receive payments when you retire (PMT)?

$$PV = PMT\ \frac{1 - \ (1 + \frac{r}{m})^{-mt}}{(\frac{r}{m})}$$

Amortizing a debt means that the debt (PV) is paid after a given length of time by equal periodic payments (PMT) that include compound interest. Examples: Paying off car payments and home mortgages.

$$PMT = PV\ \frac{(\frac{r}{m})}{1 - \ (1 + \frac{r}{m})^{-mt}}$$

1. E-Loan, an online lending service, recently offered 42-month auto loans at 6.6% compounded monthly to applicants with good credit ratings. If you have a good credit rating and can afford monthly payments of $225, how much can you borrow from E-Loan? What is the total interest you will pay for this loan?

N =
I% =
PV =
PMT =
FV =
P/Y =
C/Y =

2. If you buy a computer directly from the manufacturer for $2100 and agree to repay it in 24 equal installments at 1.3% interest per month (because this is written as a monthly interest rate, this is i and not r) on the unpaid balance, how much are your monthly payments? How much total interest will be paid?

N =
I% =
PV =
PMT =
FV =
P/Y =
C/Y =

3. You want to purchase an automobile for $30,877. The dealer offers you 0% financing for 60 months or a $6778 rebate. You can obtain 6% financing for 60 months at the local bank. Which option should you choose?

N =
I% =
PV =
PMT =
FV =
P/Y =
C/Y =

4. A sailboat costs $23,636. You pay 15% down and amortize the rest with equal monthly payments over a 8-year period. If you must pay 6.9% compounded monthly, what is your monthly payment?

N =
I% =
PV =
PMT =
FV =
P/Y =
C/Y =

5. A home in Rockville costs $575,000. You pay 20% down and finance the rest at 4.7% for 30 years. What is the mortgage? How much interest will you pay during the life of the loan?

N =
I% =
PV =
PMT =
FV =
P/Y =
C/Y =