

EXTRA PROBLEM 1: MONTHLY LOAN PAYMENT

Suppose you are planning to buy a new car. The car costs \$25000, you have been approved for financing the loan with a 5 year term through the car dealer and the annual interest rate on the loan is 5% - compounded monthly.

A. Using the following notation

B = Loan Balance (i.e. in description above B=\$25000)
R = Annual Interest Rate (i.e. in description above R=0.05)
MP = Monthly Payment

derive the monthly payment MP as a function of B and R by setting the net present value of the cash-flow of monthly payments of size MP for the term of the loan equal to the loan amount B.

Hint: Use the relationship

$$\sum_{j=1}^n x^j = \frac{x^{n+1} - x}{x - 1}$$

B. Calculate MP for the case study description above using the relationship you derived under A.