Present Value Annuities

Present Value Annuity

A series of withdrawals from an investment, or a series of payments on a loan, made at regular intervals.

Formula

$$PV = R \times \left(\frac{1 - (1 + i)^{-n}}{i} \right)$$

PV represents the present value of the annuity

R represents the regular payment / withdrawal made at each compounding period

i is the interest rate per compounding period, as a decimal

n is the total number of compounding periods

Example

How much would you need to invest at 8.3% compounded annually to provide $500 per year for the next 10 years?

Example

How much would you need to invest at 5.4% interest, compounded quarterly, to provide $1,000 every 3 months for the next 4 years?

Example

You borrow $200,000 from the bank to purchase yacht, times are good. The bank charges 6.6% compounded monthly and you will take 20 years to pay off the loan.

a. How much will each monthly payment be?

b. How much interest will you have paid, in total, over the term of the loan?