Review of Financial Mathematics

You should know the following facts and definitions.

Notation

\[ A = \text{Future Value} \]
\[ n = \text{Number of times compounded} \]
\[ P = \text{Present Value} \]
\[ N = \text{Number of payments} \]
\[ r = \text{Interest Rate (annual)} \]
\[ m = \text{Amount of payment} \]
\[ t = \text{Time (in years)} \]

**Interest Formulae**

Simple Interest

- **Interest:** \( I = Prt \)
- **Future Value:** \( A = P + I = P(1 + rt) \)

Compound Interest

- **Future Value:** \( A = P \left(1 + \frac{r}{n}\right)^{nt} \)
- **Present Value:** \( P = A \left(1 + \frac{r}{n}\right)^{-nt} \)
- Continuous Compounding: \( A = Pe^{rt} \)

**Installment Buying (Add-on Interest)**

- **Interest:** \( I = Prt \)
- **Amount to repay:** \( A = P(1 + rt) \)
- **Number of payments:** \( N = 12t \)
- **Amount of payment:** \( m = \frac{A}{N} \)
- **Annual Percentage Rate:** \( APR = \frac{2Nr}{N + 1} \)