Finance Formulas

Simple Interest: \[ I = Prt, \quad FV = P(1 + rt) \quad (r \text{ per year}) \]

Compound Interest: \[ FV = P(1 + i)^n \quad (i \text{ per term}) \]

Ordinary Annuity: \[ FV = \text{pymt} \frac{(1 + i)^n - 1}{i} \]

Annuity Due: \[ FV(\text{due}) = FV(\text{ordinary}) \cdot (1 + i) \]

Legal Loan amount = Loan amount − points − fees

Payout Annuity \[ P(1 + i)^n = \text{pymt} \frac{(1 + i)^n - 1}{i} \]

Amortized Loan

Area and Volume Formulas

Sphere: \[ V = \frac{4}{3} \pi r^3, \quad A = 4\pi r^2 \]

Triangle (Heron): \[ A = \sqrt{s(s - a)(s - b)(s - c)} \]
where \[ s = \frac{1}{2}(a + b + c) \]

Statistics

Sample Variance: \[ s^2 = \frac{\sum (x - \bar{x})^2}{n - 1} = \frac{1}{n - 1} \left( \sum x^2 - \frac{(\sum x)^2}{n} \right) \]

Sample Standard Deviation: \[ s = \sqrt{\text{variance}} \]

Margin of Error: \[ \frac{z_{\alpha/2}}{2\sqrt{n}} \quad \text{z-score:} \quad z = \frac{x - \bar{x}}{sd} = \frac{x - \mu}{\sigma} \]