Present Value with Compound Interest

Liberal Arts Mathematics

Overview

- Present Value Formula for Compound Interest
- Examples

Reminder

- Present value is the amount of money in an account now.
- Future value is the amount of money in the account at some time in the future.
- The point of calculating present value is to know how much you need today to reach a future goal.
- If you need $20,000 to buy a new car five years from now, how much do you need to invest today?

Present Value Formula for Compound Interest

Present Value with Compound Interest

Formula

$$PV = \frac{FV}{\left(1 + \frac{r}{n}\right)^{n \cdot t}}$$

- $PV =$ Present value
- $FV =$ Future value
- $r =$ annual interest rate as a decimal
- $t =$ time in years
- $n =$ number of compounding periods per year

Examples

Present Value with Compound Interest

Example 1

Compute the present value of the account with the given conditions.

- $FV = \$250{,}000$
- $r = 3.45\%$
- $t = 25$ years
- Annual compounding

Example 2

Compute the present value of the account with the given conditions.

- $FV = \$150{,}000$
- $r = 4.81\%$
- $t = 35$ years
- Quarterly compounding

Example 3

Compute the present value of the account with the given conditions.

- $FV = \$150{,}000$
- $r = 4.81\%$
- $t = 35$ years
- Monthly compounding