Important Present Value Formulas PDF



Formulas Examples with Units



1) Annuity Due for Present Value Formula 🕝

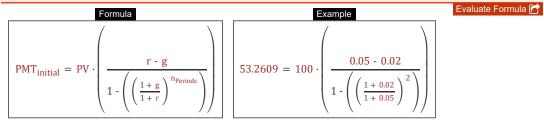
Evaluate Formula 🦳

$$PV_{AD} = PMT \cdot \left(\frac{1 - \left(\frac{1}{(1+r)^{n_{Periods}}}\right)}{r}\right) \cdot (1+r)$$

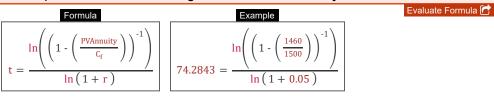
Example

$$117.1429 = 60 \cdot \left(\frac{1 - \left(\frac{1}{(1 + 0.05)^2}\right)}{0.05}\right) \cdot (1 + 0.05)$$

2) Growing Annuity Payment using Present Value Formula 🕝

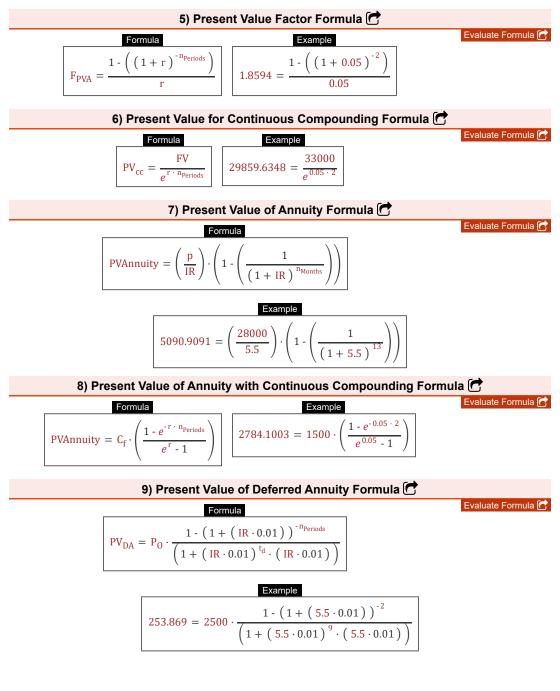


3) Number of Periods using Present Value of Annuity Formula 🕝



4) Present Value Continuous Compounding Factor Formula Formula Example Evaluate Formula $rac{1}{r}$ $F_{PV} = (e^{-r \cdot t})$ 0.6703 = $(e^{-0.05 \cdot 8})$





10) Present Value of Deferred Annuity based on Annuity Due Formula 🕝

 $PV_{DA} = P_{D} \cdot \frac{1 \cdot (1 + (IR \cdot 0.01))^{-n_{Periods}}}{(1 + (IR \cdot 0.01))^{t_{d} \cdot 1} \cdot (IR \cdot 0.01)}$

Example

$$132.3366 = 110 \cdot \frac{1 \cdot (1 + (5.5 \cdot 0.01))^{-2}}{(1 + (5.5 \cdot 0.01))^{9 \cdot 1} \cdot (5.5 \cdot 0.01)}$$

11) Present Value of Future Sum given compounding periods Formula 🕝

FormulaExample
$$PV = \frac{FV}{\left(1 + \left(\frac{\%RoR}{C_n}\right)\right)^{C_n + n_{Periods}}}$$
 $17.4524 = \frac{33000}{\left(1 + \left(\frac{4.5}{11}\right)\right)^{11 + 2}}$

12) Present Value of Future Sum given Number of Periods Formula 🕝

FormulaExample
$$PV = \frac{FV}{\exp(\ensuremath{\%}\ensuremath{\Re}\ensuremath{RoR}\ensuremath{\cdot}\ensuremath{n_{Periods}}\ensuremath{)}$$
 $4.0725 = \frac{33000}{\exp(\ensuremath{4.5}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{2}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath{\cdot}\ensuremath$

13) Present Value of Future Sum given Total Number of Periods Formula 🕝

Formula Example

$$PV = \frac{FV}{(1 + IR)^{t}} \qquad 0.0104 = \frac{33000}{(1 + 5.5)^{8}}$$

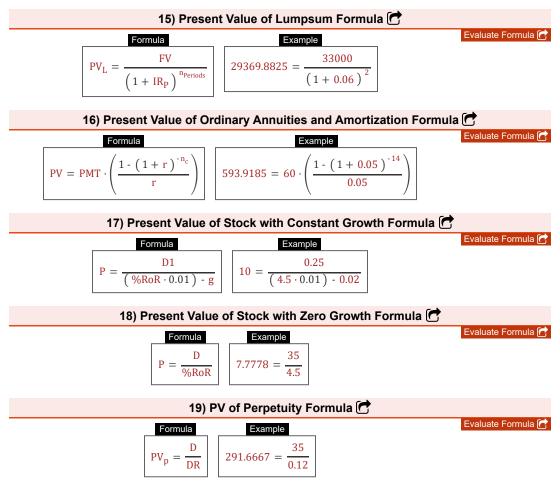
14) Present Value of Growing Annuity Formula
Formula
Evaluate Formula
$$PV_{ga} = \left(\frac{II}{r-g}\right) \cdot \left(1 - \left(\frac{1+g}{1+r}\right)^{n_{Periods}}\right)$$
Example
$$3755.102 = \left(\frac{2000}{0.05 - 0.02}\right) \cdot \left(1 - \left(\frac{1+0.02}{1+0.05}\right)^{2}\right)$$

Evaluate Formula 🦳

Evaluate Formula

Evaluate Formula 🦳

Evaluate Formula 🦳



Variables used in list of Present Value Formulas above

- %RoR Rate of Return
- Cf Cashflow per Period
- Cn Compounding Periods
- D Dividend
- D1 Estimated Dividends for Next Period
- DR Discount Rate
- FPV PV Continuous Compounding Factor
- F_{PVA} Annuity Present Value Factor
- FV Future Value
- g Growth Rate
- II Initial Investment
- IR Interest Rate
- IR_P Interest Rate per Period
- n_c Total Number of Times Compounded
- nMonths Number of Months
- n_{Periods} Number of Periods
- p Monthly Payment
- P Price of Stock
- PD Annuity Payment Due
- Po Ordinary Annuity Payment
- PMT Payment made in Each Period
- PMT_{initial} Initial Payment
- PV Present Value
- PV_{AD} Annuity Due Present Value
- PV_{cc} Present Value with Continuous Compounding
- PV_{DA} Present Value of Deferred Annuity
- PV_{ga} Present Value of Growing Annuity
- PV_L Present Value of Lumpsum
- PVp PV of Perpetuity
- PVAnnuity Present Value of Annuity
- r Rate per Period
- t Total Number of Periods

Constants, Functions, Measurements used in list of Present Value Formulas above

- constant(s): e,
 2.71828182845904523536028747135266249
 Napier's constant
- Functions: exp, exp(Number) n an exponential function, the value of the function changes by a constant factor for every unit change in the independent variable.
- Functions: In, In(Number) The natural logarithm, also known as the logarithm to the base e, is the inverse function of the natural exponential function.

• t_d Deferred Periods



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