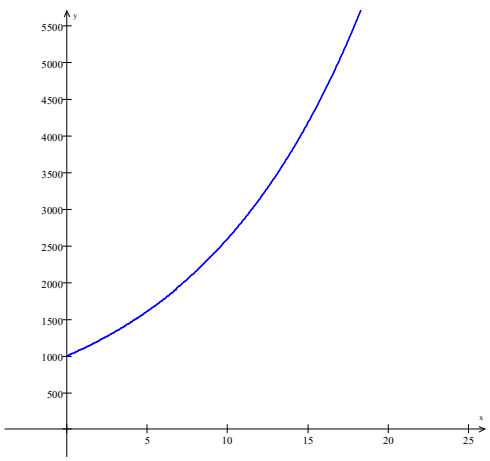
8.3 – Compound Interest

Compound Interest – Interest is earned on not only the original amount invested but also any interest that has already been credited. Interest will be earned at the end of specified periods of time.

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

A = Amount in account after t years (Future Value)
P = Principal or Present Value
r = Annual Interest Rate (in decimal form)
n = Number of compounding periods per year
t = Time in years



Example

As with the Simple Interest Formula the Compound Interest Formula can be used to solve for the Principal or Present Value (The value needed to be invested at certain interest rate to achieve a specified value after t years).

Example

How can you compare different compounding amounts?

Effective Annual Yield or Effective Rate – The annual simple interest rate that produces the same amount of money in an account over a 1-year period when the account is subjected to compound interest at a stated rate. It is sometimes called the annual effect yield, annual equivalent yield, or the annual percentage yield

$$Y = \left(1 + \frac{r}{n}\right)^n - 1$$

Y = Effective Annual Yield
r = Annual Interest Rate (in decimal form)
n = Number of compounding periods per year

Example

The Compound Interest formula could be used to find time (t) or interest rate (r) like was done with the Simple Interest formula. Due to the complexity of the problems this book does not show them.

Finding time (t) involves logarithms.

Finding interest rate (r) involves radicals.