Bond Convexity Formula:

$$Convexity = \frac{1}{P} \times \left(\frac{1}{(1+y)^2}\right) \times \sum_{t=1}^{n}[PV_t \times t \times (t+1)]$$

Inputs:

- P = The price at which investors "purchase" the bond. (See the *Bond Price Calculation* pdf for details on how this is computed.)
- PV = The present value of the cash flows received by the investor—monthly, quarterly, semiannually, or annually.
- t = The time period (month, quarter, semiannual, or year) in which the investor receives a payment.
- y = The yield to maturity (y), which is the discount rate used in the formula. It is the rate of return that an investor will earn if they reinvest all the coupon payments from the bond at a fixed interest rate until the bond matures.

Bond Convexity in years Formula:

$$Convexity\ in\ years = \frac{Convexity\ in\ periods\ per\ year}{m^2}$$

Inputs:

- m = the number of payment periods per year (e.g., 1 for annual, 2 for semiannual, 4 for quarterly, 12 for month.).