Basic formulas

Simple interest:

$$FV = PV * (1 + r * t)$$

(Only) Interest:

$$I = PV * r * t$$

Compound interest:

$$FV = PV * (1 + r)^t$$

Effective interest rate:

$$r_e = (1 + \frac{r}{m})^m - 1$$

... where r ... nominal interest rate and m ... number of conversions (number of Interest periods)

Interest intensity:

$$f = ln(1 + r_e) \quad or \quad r_e = e^f - 1$$

Continous interest:

$$FV = PV * e^{f*t}$$

Anticipated interest:

$$PV = FV * (1 - d * t)$$

i.e. ... ahead paid interest, and d ... discount rate.

Commercial discount:

$$D = FV * d * t$$

Annuities

Saving plan

Ahead-paid savings:

$$S^0 = a * \frac{(1+r)^n - 1}{r}$$

After-paid savings:

$$S^1 = a * (1+r) * \frac{(1+r)^n - 1}{r}$$

Pension plan

Ahead-paid pension:

$$D^0 = a * \frac{1 - \frac{1}{(1+r)^n}}{1 - \frac{1}{(1+r)}}$$

After-paid pension:

$$D^1 = a * \frac{1 - \frac{1}{(1+r)^n}}{r}$$

Repayment plan

Estimation of annuity:

$$a = \frac{D_0 * r}{1 - \frac{1}{(1+r)^n}}$$

. . . and then: $a = I + M$.