

## Imputed Interest According to the Residual Value Method and According to the Average Value Method

$$CI_0 := 500000$$

Initial investment

$$R_n := 50000$$

Terminal value at the end of useful life

$$n := 10$$

Useful life in years

$$t := 0..n - 1$$

Relevant points in time

$$i := 0.1$$

Imputed interest rate

$$CI(t) := CI_0 - \frac{CI_0 - R_n}{n} \cdot t$$

Capital invested in point of time t

$$IRV(t) := \frac{CI(t) + CI(t + 1)}{2} \cdot i$$

Imputed interest per year according to the residual value method

$$IAV := \frac{CI(0) + CI(n)}{2} \cdot i$$

Imputed interest per year according to the average value method

t + 1 =

1
2
3
4
5
6
7
8
9
10

IRV(t) =

47750.00
43250.00
38750.00
34250.00
29750.00
25250.00
20750.00
16250.00
11750.00
7250.00

$$IAV = 27500.00$$

$$\sum_t IRV(t) = 275000.00$$

$$n \cdot IAV = 275000.00$$

Alternatively:

$$t := 0.5, 1.5..n - 0.5 \quad IRV(t) := CI(t) \cdot i$$

t =

0.5
1.5
2.5
3.5
4.5
5.5
6.5
7.5
8.5
9.5

IRV(t) =

47750.00
43250.00
38750.00
34250.00
29750.00
25250.00
20750.00
16250.00
11750.00
7250.00