

### Assignment 3 to 3.2.3.3 - Solution -

For a machine the following data are given:

$CI_0 := 140000$	Initial investment
$R_n := 40000$	Residual value at the end of useful life
$n := 7$	Useful life in years
$i := 0.1$	Imputed interest rate

$$CI(t) := CI_0 - \frac{CI_0 - R_n}{n} \cdot t \quad \text{Capital invested after } t \text{ years}$$

Which are the imputed interest charges per year according to the residual value method and according to the average method?

Residual value method

Average value method

$$\text{Interest\_RV}_1 := \frac{CI(0) + CI(1)}{2} \cdot i$$

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

$$\text{Interest\_RV}_1 = 13285.71$$

$$\text{Interest\_AV} = 9000.00$$

$$\text{Interest\_RV}_2 := \frac{CI(1) + CI(2)}{2} \cdot i$$

$$\text{Interest\_RV}_2 = 11857.14$$

$$\text{Interest\_RV}_3 := \frac{CI(2) + CI(3)}{2} \cdot i$$

$$\text{Interest\_RV}_3 = 10428.57$$

$$\text{Interest\_RV}_4 := \frac{CI(3) + CI(4)}{2} \cdot i$$

$$\text{Interest\_RV}_4 = 9000.00$$

$$\text{Interest\_RV}_5 := \frac{CI(4) + CI(5)}{2} \cdot i$$

$$\text{Interest\_RV}_5 = 7571.43$$

$$\text{Interest\_RV}_6 := \frac{CI(5) + CI(6)}{2} \cdot i$$

$$\text{Interest\_RV}_6 = 6142.86$$

$$\text{Interest\_RV}_7 := \frac{CI(6) + CI(7)}{2} \cdot i$$

$$\text{Interest\_RV}_7 = 4714.29$$