

## Assignment 1 to 3.2.3.3 - Solution -

For a machine the following data are given:

$$CI_0 := 140000 \quad \text{Initial investment}$$

$$n := 7 \quad \text{Useful life in years}$$

For the capital invested after t years the following function is valid:

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

The average capital invested is:

$$CI_a := \frac{\int_0^n CI(t) dt}{n} \quad \text{Average capital invested}$$

Determine  $CI_a$  in figures and in symbols.

$$CI(t) := 140000 - 20000t$$

$$\int_0^n CI(t) dt = 490000$$

$$\frac{\int_0^n CI(t) dt}{n} = 70000$$

Symbolic solution:

$$CI_0 := CI_0$$

$$n := n$$

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

$$\frac{\int_0^n CI(t) dt}{n} \rightarrow \frac{1}{2} \cdot CI_0$$

These equations are necessary to convince Mathcad's engine to provide symbols and not figures.