

## PROBLEM:

A periodic signal  $x(t) = x(t + T_0)$  is described *over one period*,  $0 \leq t \leq T_0$ , by the equation

$$x(t) = \begin{cases} t & 0 \leq t \leq t_c \\ 0 & t_c < t \leq T_0 \end{cases}$$

where  $0 < t_c < T_0$ .

(a) Sketch the periodic function  $x(t)$  for  $-T_0 < t < 2T_0$  for the specific case  $t_c = \frac{1}{2}T_0$ .

(b) Determine the D.C. coefficient of the Fourier Series,  $a_0$ . Once again, use the specific case of  $t_c = \frac{1}{2}T_0$ .