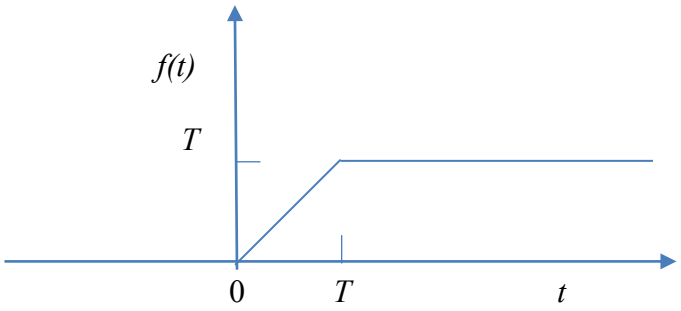
ECE 360 Assignment 1

Qu.1. Obtain the Laplace transform of the function defined by:

a.
$$f(t) = 0, \qquad for\ t < 0$$
$$= \cos 2\omega t \bullet \cos 4\omega t, \qquad for\ t \geq 0$$
(where "●" represents convolution)

b.
$$f(t) = 0, \qquad for\ t < 0$$
$$= \cos 2\omega t \bullet \cos 4\omega t, \qquad for\ t \geq 0$$
(where "●" represents product)

Qu. 2. What is the Laplace transform of the function f(t) shown in the Figure?



Function *f(t)*

Qu.3. Obtain the inverse Laplace transform of the following function:

$$F(s) = \frac{5e^{-s}}{s+2}$$

Qu.4. What is the solution of the following differential equation?

$$2\ddot{x} + 7\dot{x} + 3x = u(t), \quad x(0) = 3, \quad \dot{x}(0) = 0, \quad u(t): unit\ step$$

Qu.5. Obtain the solution of the differential equation:

$$\ddot{x} + 3\dot{x} + 6x = 0, \quad x(0) = 0, \quad \dot{x}(0) = 3$$