



4<sup>th</sup> Quiz

Student Name in Arabic:

Section: B.N<sup>o</sup> :

1) Solve for  $x(t)$  and  $y(t)$ , given that  $x(0) = 0$ ,  $y(0) = 3$ , and

$$\frac{dx}{dt} + \frac{dy}{dt} = 0, \quad x - \frac{dy}{dt} + y = e^t$$

2) Find  $F(s)$  of the following functions:

$$f(t) = \frac{e^{2t} - e^{-3t}}{t^2} \quad f(t) = \left\{ \begin{array}{ll} \sin t & 0 < t \leq \pi \\ t - \pi & \pi < t \leq 2\pi \\ \pi & t > 2\pi \end{array} \right\}$$

3) Expand in Fourier series the following functions

$$f(x) = \left\{ \begin{array}{ll} \pi/2 + x, & -\pi \leq x \leq 0 \\ \pi/2 - x, & 0 < x \leq \pi \end{array} \right. \quad f(x) = \left\{ \begin{array}{ll} x, & 0 \leq x \leq \pi \\ -(x - \pi), & \pi < x \leq 2\pi \end{array} \right.$$