Birzeit University-Faculty of Engineering and Technology
Electrical and Computer Engineering Department
Signals & Sytems
MATLAB _Assignment

Inst.: Dr. Ashraf Al-Rimawi **Summer semester 20/21**

Question I:

Generate and plot the following signals using MATLAB:

1. X1(t) = u(t+3)- u(t-4)
2. A finite pulse $\sum_{n=-\infty}^{\infty} \Pi\left(\frac{t-3n}{2}\right)$
3. $X_2(t)$= u(t-4) +r(t-4)-2r(t-7) +r(t-13) in the time interval [0 16]

Question II:

1. Generate and plot the signals y1(t)= sin (200πt), y2(t)= cos(500πt), then determine y1 and plot the product of two signals.
2. Determine, using the MATLAB plots, if the generated signal is periodic. In case a signal is periodic, determine its fundamental frequency.

Question III:

Write For the following differential equation

$$\frac{dy(t)}{dt} + 30\, y(t) = 20$$

1. Write the program that solve the following differential equation (for t>0) using zero initial conditions.
2. Evaluate the Fourier Transform of the Transfer Function H(f)=Y(f)/X(f).
3. Plot the magnitude and phase of the Transfer Function H(f).

Question IV:

Write a program that computes and plots the convolution of the functions

$$x(t) = (10\, e\text{^}(-0.2t)\,)\Pi((t-7)/4), h(t) = (10e\text{^}(0.2\,t)\,)\Pi((t-1)/2)$$