**Question 1:**

Use Matlab to find Fourier transform of the following signals.

a) \( x(t) = 2[u(t) - u(t - 6)] \)
b) \( x(t) = e^{-2t} [u(t) - u(t - 6)] \)
c) \( x(t) = r(t) - r(t - 6) - 6u(t - 6) \)

**Question 2:**

For the following function \( x(t) = e^{-at}u(t) \), use Matlab to find fourier transform for different values of \( a \) (0.5, 1, 2, 3) and also plot the spectrum with respect to \( \omega \) and comment on your results.

**Question 3:**

For the following functions plot the functions use `plot` and `stem` and use `fft` to plot the phase and amplitude spectrum of the function.

a) \( y(t) = \sin(2\pi 8t) \quad 0 \leq t < 1 \)
b) \( y(t) = \sin(2\pi 8t) + \cos(2\pi 16t) \quad 0 \leq t < 1 \)
c) \( y(t) = \sin(2\pi 10t) + 5\cos(2\pi 20t) \quad 0 \leq t < 1 \)

**Hint:**

1. Use the sampling frequency that displays your signal in accurate form
2. Predict the least value of sampling frequency
3. Comment on