1. Plot the following signal

$$y(t) = Asin(2\pi ft);$$

Where A, f are inputs from the user. Assume sampling frequency $F_s = 800$;

2. Plot the following signal

$$y'(t) = c^t y(t)$$

Where c is user input.

3. Add random noise to $y(t)$ and plot the noisy signal.
4. Implement a function to preprocess a signal $x(t)$ as the following

$y(t) = \frac{x(t)-\mu}{\sigma^2}$

5. Implement a function that will take a 2×2 matrix A and a 2×1 vector b and return the solution of the system $Ax = b$ for x.
6. Implement a function that will take a $m \times n$ matrix A and a vector x of size n and return Ax.