Homework#1

a. Draw the following waveform

$$\begin{cases} 6\sin(\omega t + \frac{\pi}{3}) & t < 0.1 \\ 10\sin(\omega t + \frac{\pi}{3}) & t \geq 0.1 \end{cases}$$

f=60 Hz, and sampling frequency is 12 samples per cycle.

b. Estimate the amplitude of the signal using Mann&Morrison algorithm
c. Estimate the amplitude of the signal using Prodar algorithm
d. Add second harmonic to the signal which means the signal becomes as follows

$$\begin{cases} 6\sin(\omega t + \frac{\pi}{3}) + 3\sin(2\omega t + \frac{\pi}{3}) & t < 0.1 \\ 10\sin(\omega t + \frac{\pi}{3}) + 3\sin(2\omega t + \frac{\pi}{3}) & t \geq 0.1 \end{cases}$$

and repeat b and c.

Note: Include the Matlab Code (or whichever software that is used) in your report.