Homework 4:

1) Given the Function:

$$y(t) = 25 + 10\sin 6\pi t$$

Find the mean and Root Mean Square Values over the time periods *From* t_1 *to* t_2 , as listed below

a) 0 to 0.1 s
b) 0.4 to 0.5 s
c) 0 to 1/3 s
d) 0 to 20 s

Homework 4:

2) Given the functions:

a) $\sin\frac{10\pi t}{5}$

b) $8\cos 8t$

c) $\sin 5n\pi t$ for n=1 to ∞

Calculate the period (sec), frequency (Hz), and radian frequency of each function

Homework 4:

3) For a given sinusoidal process $x(t)$, at time zero ($t = 0$)

$$x = 0 \quad @\ t=0$$

$$\frac{dx}{dt} = 5\ \text{cm/s} \quad @\ t=0\ \&\ f = 1\ \text{Hz}$$

~~Calculate the period (*sec*), frequency (*Hz*), and radian frequency (*rad/sec*) of each function~~

Calculate

a) the Oscillation Period, T
b) Oscillation Amplitude, A
c) Displacement Function, x(t)
d) Maximum Displacement Velocity

Hint: Assume x(t) = A • sin(w • t)

Homework 4:

4) A given process has an input EMF level described by

$$E(t) = 2\sin 4\pi t \quad \text{mV}$$

Write a Labview VI to plot the data generated by the function above, but sampled at times increments of {1/8, 1/5, 1/3, and 1/21} seconds

Plot 4 seconds of data for each plot .. Discuss your results.