

PROBLEM:

Suppose that MATLAB is used to plot a sinusoidal signal. The following MATLAB code generates a signal $x[n]$ and plots it. Unfortunately the plot does not have its time axis labeled properly.

```
dt = 1/200;  
Duration = 0.3;  
tt = 0 : dt : Duration;  
xx = 3*imag( exp( j*1224*pi*tt ) );      %--- j = sqrt(-1)  
stem( xx )      %<--- OOPS! there is no time axis
```

- Make a plot of the signal—either sketch it or do it via MATLAB.
- For the plot above, determine the correct formula for the discrete-time signal in the form:

$$x[n] = A \cos(\hat{\omega}_0 n + \phi)$$

Make sure that $\hat{\omega}_0$ lies between $-\pi$ and $+\pi$.

- Determine the period of $x[n]$, i.e., find N_0 where $x[n + N_0] = x[n]$.
- EXPLAIN how aliasing affects the plot that you see.