Paste MATLAB code and plots on this word document.

1. Discrete sequence-----MATLAB

Consider the following formula

$$x\left[n\right]=x\left[n-1\right]+x\left[n-3\right] n\geq 3$$

$$x\left[0\right]=0$$

$$x\left[1\right]=1$$

$$x\left[2\right]=2$$

Find the rest of the sequence for $0\leq n\leq 50$ and plot it using the MATLAB function stem.

1. Periodicity of sampled signals---MATLAB

Consider an analog periodic sinusoid x(t)=$3πt+π/4)$ being sampled using a sampling period $T\_{s}$ to obtain the discrete-time signal $x\left[n\right]=x\left(t\right)\left|\right.\_{t=nTs}=\cos(\left(3πT\_{s}n+\frac{π}{4}\right)).$

1. Determine the discrete frequency of x[n]
2. Choose a value of $T\_{s}$ for which the discrete-time signal x[n] is periodic. Use MATLAB to plot a few periods of x[n], and verify its periodicity
3. Choose value of $T\_{s}$ for which the discrete—time signal x[n] is not periodic. Use MATLAB to plot x[n] and choose an appropriate length to show the signal is not periodic.
4. Determine under what condition the value of $T\_{s}$ makes x[n] periodic.