ECE 642 - Assignment 1

1. Consider the signal $x(t) = 2\text{sinc}(3t)$.

a. Classify this signal as energy vs. power, periodic vs. aperiodic, random vs. deterministic, discrete-time vs. continuous-time.

b. What is the energy of $x(t)$?

c. Plot the signal in MATLAB so that five zero values are included on both the positive and negative side of the plot. Make the plot with both a "bad" and a "good" choice for the sampling period T_s.

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2. Consider the complex signal $z(t) = \cos(2\pi t) + j3\sin(2\pi t)$.

2.a. Using MATLAB, show the evolution of the signal on the complex plane in the interval $0 \leq t \leq 1$ (you can choose $T_s = 0.01$).

2.b. Calculate the magnitude $\alpha(t) = |z(t)|$.

2.c. Using MATLAB, plot $\alpha(t)$ as a function of time in the interval $0 \leq t \leq 1$ (you can choose $T_s = 0.01$).