

PROBLEM:

A digital chirp signal is synthesized according to the following formula:

$$x[n] = \Re\{e^{j\theta[n]}\} = \cos(\pi \times 10^{-5}n^2) \quad \text{for } n = 0, 1, 2, \dots, 4000$$

- Make a plot of the rotating phasor $e^{j\theta[n]}$ for the three cases: $n = 20, 50$ and 70 .
- If this signal is played out through a D-A converter whose sampling rate is 8 kHz, make a plot of the instantaneous analog frequency (in Hertz) versus time for the analog signal. Make sure that you determine the length of the signal in seconds, as well as the starting and ending frequencies.