

## PROBLEM:

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

$$x[n] = \Re\{e^{j\theta[n]}\} = \cos(\pi(0.4 \times 10^{-3})n^2) \quad \text{for } n = 0, 1, 2, \dots, 1000$$

- Make a plot of the rotating phasor  $e^{j\theta[n]}$  for  $n = 997, 998, 999, 1000$ .
- If this signal is played out through a D-A converter whose sampling rate is 2 kHz, make a plot of the instantaneous analog frequency (in Hertz) versus time for the analog signal.
- If the digital signal  $v[n] = \cos(0.2\pi n)$  is played out through a D-A converter whose sampling rate is 2 kHz, what (analog) frequency will be heard?