Tune-Up Tuesday #8 for October 31, 2017

% zeros on unit circle

z0 = -1; % angle pi

z1 = 1; % angle 0

numer = [1 -(z0+z1) z0\*z1];

% poles inside unit circle

f0 = 440; fs = 8000;

w0hat = 2\*pi\*f0/fs;

r = 0.99;

p0 = r \* exp(j\*w0hat);

p1 = r \* exp(-j\*w0hat);

denom = [1 -(p0+p1) p0\*p1];

% Set magnitude response

% at pole angle to be 1

z = exp(j\*w0hat);

zvec = [z^2 z 1];

C = abs((denom\*zvec') / (numer\*zvec'));

freqz(C\*numer, denom);

1. Use IIR filter with the   
   pole-zero diagram  
   defined by MATLAB code  
   posted on Canvas site
2. Lowpass, highpass,  
   bandpass, bandstop or  
   allpass filter? Use  
   freqz(C\*numer, denom);
3. Run code on slide 4-5 to play a C major scale
4. Run code on slide 4-7 to plot its spectrogram
5. Filter the C major scale in MATLAB variable vec
6. Play the filtered C major scale. What changed?
7. Plot the spectrogram of the filtered C major scale. What changed?