ESTIMATING SPECTRAL MAGNITUDE
Frequency Representation of a Signal

- To see frequency domain representation of a signal
  - abs(fft())
  - psd()
  - spectrum()
Example Checking Signal Magnitude

- Input waveform made up of two complex sinusoids. Red=real, blue=imag
- Higher frequency is half the magnitude of lower freq tone
Magnitude of $\text{abs}(\text{fft}())$

- magnitude of FFT of signal on linear scale
Magnitude of abs(fft())

- magnitude of fft of signal on magnitude-log scale
- Note double precision floating point has 52-bit mantissa (52 bits x 6 dB = 312 dB)
Magnitude of \(\text{abs}(\text{fft}())\)

- magnitude of \(\text{fft}\) of signal on magnitude-log scale
- Higher tone is \(-6\text{dB}\) down from lower tone
Magnitude of psd()
Magnitude of psd()  

- psd zoomed in  
- Higher tone is $-6\text{dB}$ down from lower tone