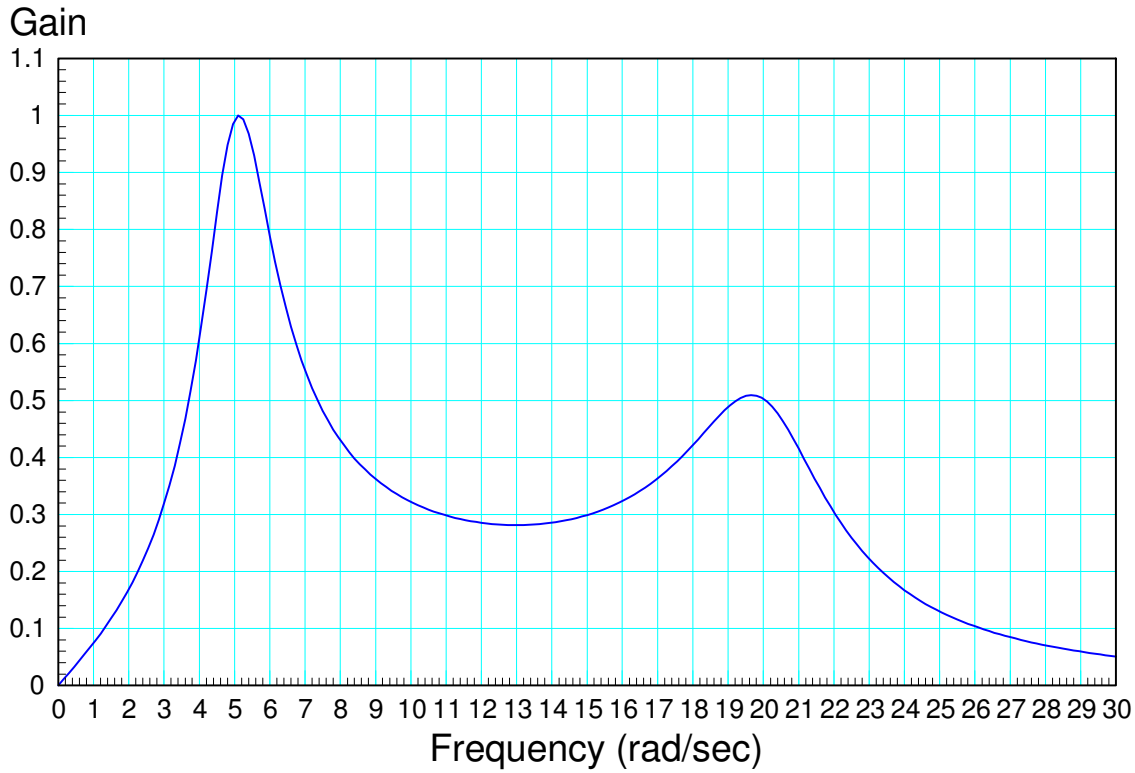
ECE 321: Handout #8

Poles, Zeros, and Frequency Resposne

1) Determine the filter, G(s), which has the following gain vs. frequency



Solution

The complex part of the pole is the resonance

The real part of the pole is the bandwidth/2

$$G(s) \approx k\left(\frac{s}{(s+1+j5)(s+1-j5)(s+2.25+j19.5)(s+2.25-j19.5)}\right)$$

Match the gain at a point (max gain = 1)

k = 720 (from Matlab)

$$G(s) \approx \left(\frac{720s}{(s+1+j5)(s+1-j5)(s+2.25+j19.5)(s+2.25-j19.5)}\right)$$