ECE 460 Quiz 11 04.11.01

Name: KEY
Honor Code:

Draw the asymptotic Bode plots for $G(s)H(s) = \dfrac{(s+1)}{s(s+20)}$.

$G(s)H(s) = \dfrac{\left(\frac{s}{1}+1\right)}{s\left(\frac{s}{20}+1\right)} * \frac{1}{20}$ Break Freqs: 1, 20 Init. ~~Value~~ $20\log_{10}\left(\frac{1/20}{1}\right) = -6.02$ dB

Init slope = -20 dB/dec

$\angle G(j\omega)H(j\omega) = \angle(j\omega+1) - \angle(j\omega) - \angle(j\omega+20)$

$= \tan^{-1}(\omega) - 90° - \tan^{-1}(\omega/20)$

Starts at $-90°$

Ends at $-270°$

at $\omega = 1$: $\angle GH = -47.86°$

$\omega = 20$: $\angle GH = -47.86°$