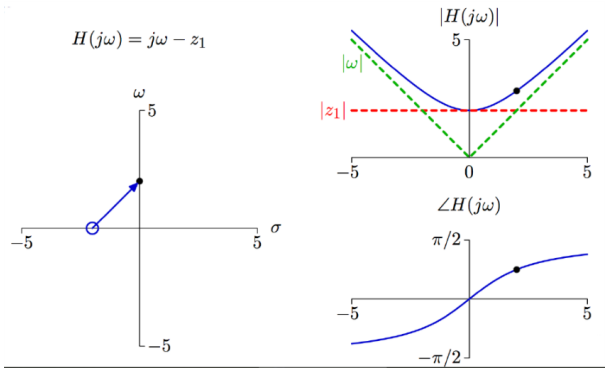
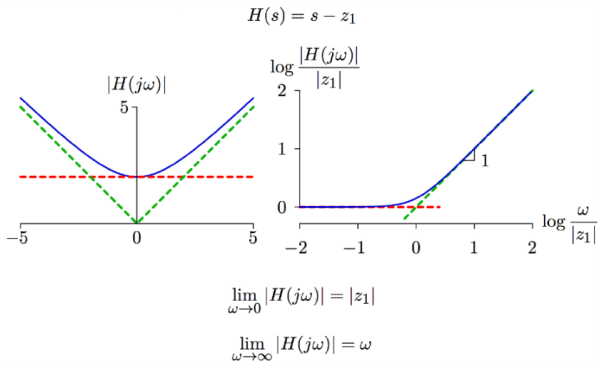
VE216 Lecture 11

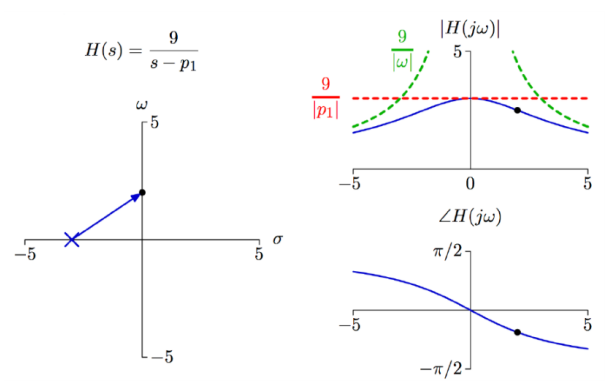
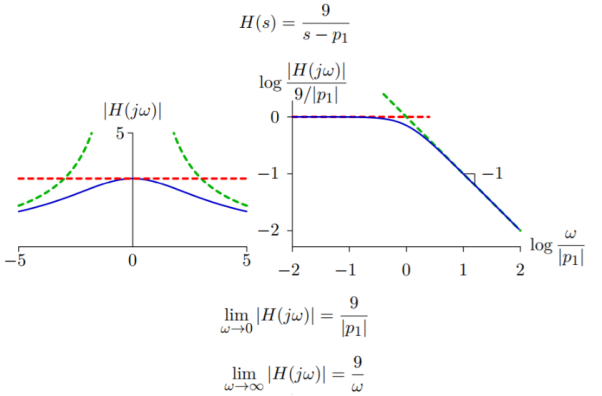
> CT Frequency Response and Bode Plots

Asymptotic Magnitude Behavior

Isolated Zero

Magnitude	Asymptotic
	

Isolated Pole

Magnitude	Asymptotic
	

Complicated Systems Asymptotic Behavior

$$H(s_0) = K\frac{\prod_{q=1}^{Q}(s_0 - z_q)}{\prod_{p=1}^{P}(s_0 - p_p)}, \text{ then } |H(s_0)| = \left|K\frac{\prod_{q=1}^{Q}(s_0 - z_q)}{\prod_{p=1}^{P}(s_0 - p_p)}\right| = |K|\frac{\prod_{q=1}^{Q}|s_0 - z_q|}{\prod_{p=1}^{P}|s_0 - p_p|}$$

Thus $log|H(j\omega)| = log|K| + \sum_{q=1}^{Q} log|j\omega - z_q| - \sum_{p=1}^{P} log|j\omega - p_p|$

With proportion to the $log(\omega)$, we get the bode plot.