

Lecture 30: Gain and Phase Margin Handout

Example 3 in Lecture 30

Steps for Computing Gain Margin from a Bode Plot

- 1.
- 2.
- 3.
- 4.

Steps for Computing Phase Margin from a Bode Plot

- 1.
- 2.
- 3.

What's Different for Computing GM and PM from a Nyquist Plot?

Example 3

Consider a closed-loop, negative unity feedback system with forward gain

$$G(s) = \frac{0.5}{(s + 0.5)(s + 1)(s + 0.1)},$$

which has the Bode plot shown in Figure 1 and Nyquist plot shown in Figure 2. Compute the gain and phase margins from both plots. (Hint: you will need to use a calculator or the dB conversion plot in Figure 3.) Are your answers consistent?

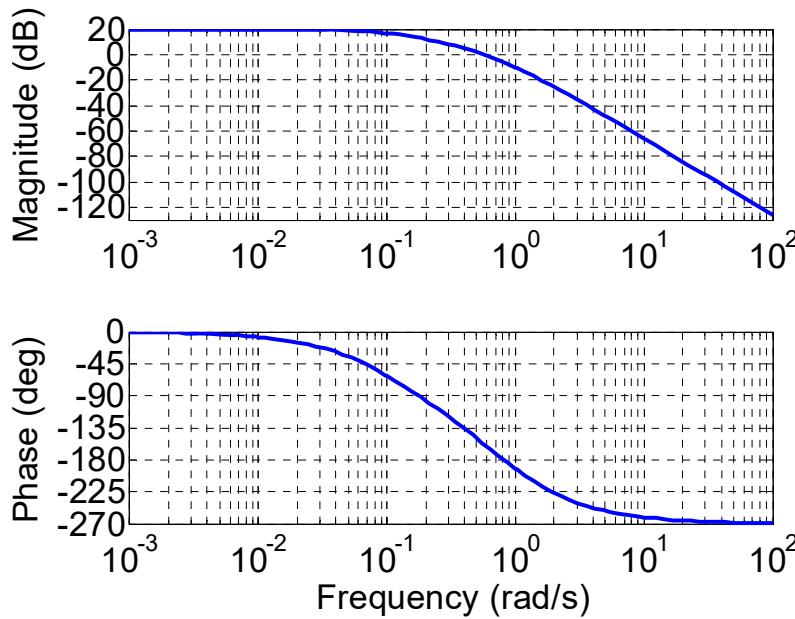


Figure 1: Bode plot for $G(s)$

