Indian Institute of Technology Kanpur
Department of Electrical Engineering
EE 250 Control Systems Analysis
Tutorial 7

24 March 2021

Question 1.

Given the system $G(s) = \frac{K}{(s+1)^3}$. Draw the nyquist plot for K=4 and K=10. Comment on the close-loop system stability.

Question 2.

The open-loop transfer function of a system, with unity feedback, is given as

$$G(s) = K(\frac{s+2}{(s-2)^2})$$

1. Draw the nyquist plot for K=1. Comment on the stability of the system and evaluate its gain margin.
2. How does the plot change for K=10? Comment on the stability of the system and evaluate the phase margin.

Question 3.

Consider a unity feedback system with open-loop gain as

$$L(s) = K\frac{s+2}{s(s-1)}$$

Draw the nyquist plot for the system and find the range of K for which the system will be stable.