

1. Consider the system with transfer function

$$G(s) = \frac{Ks + 1}{s^3 + s^2 + (K + k)s + 1}.$$

(a) For $K = 1$, find the sensitivity S_k^G of this transfer function with respect to k assuming nominal value $k = 2$. Then plot its magnitude as a function of frequency.

(b) Repeat (a) with $K = 100$ and compare the effect of a large loop gain on the sensitivity.