# MATH 213 - Tutorial 8: Bode plots

1. Draw the Bode plot for
$$T(s) = 100\frac{s+10}{s(s+11)((s+5)^2+100)}$$

2. Draw the Bode plot for
$$T(s) = \frac{10^7(s+0.01)}{((s+56)^2+0.1)((s+12)^2+60)}$$

3. Draw the Bode plot for
$$T(s) = 100\frac{10s-1}{(s-10)(s+960)}$$
Use the bode plot to argue that the system is unstable.

4. Suppose we are controlling the system $T(s) = \frac{10^4}{s+0.01}$ with the controller $C(s) = \frac{s+1}{(s+10)^2+10^6}$ and we know that $T(s)$ and $C(s)$ are BIBO stable transfer functions. Draw the Bode plot for $T(s)C(s)$ and use this to determine if the closed loop system is stable.