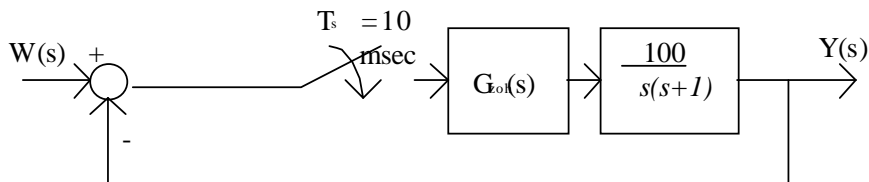


0. Lab 4 is due Wednesday, as well. Please use my numbers on the Prelab 4 Solution.

1. Consider the following system:



- Find  $G_{zoh}G(s)$  then draw the Bode Plot (use the Matlab Bode function if you need help)
- Find the Nyquist Path and Nyquist Plot
- Find the phase cross over frequency and the gain cross over frequency
- Find the gain and phase margin
- Is the closed-loop system stable or unstable
- What is the simplest digital compensator (filter) you can insert such that the closed-loop system is marginally stable
- What are the gain and phase margins after inserting your digital compensator
- Finally, design the simplest compensator such that the system has a gain margin of 40 dB