(1)

BM2000 Control Systems

Problem set 2

Instructions

• You are not expected to submit the answers to these questions.

Questions

1. For the system shown below, find the value of K that yields 10% overshoot for a step input.



2. For the system shown below, find K and α to yield a settling time of 0.12 second and a 20% overshoot.



3. For the following second order system

$$\ddot{y}(t) + 2\zeta\omega_n \dot{y}(t) + \omega_n^2 y(t) = \omega_n^2 x(t)$$

prove that the system is BIBO stable if $\zeta > 0$ and $\omega_n > 0$.