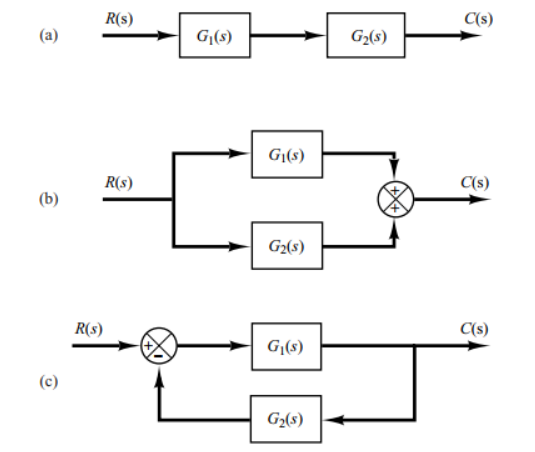
Mid-term Exam for 1st year Extension Control PG

Reference: “Modern Control Engineering”,K.Orgata, 5th edition.

Student: Binyam Beyene Tolera

1. Transfer function
   1. Transfer functions

Find the transfer function for each cases (program 2-1).



* 1. Transformation from transfer function to state space representation and vice versa

1. Given the transfer function as (Program 2-2)

Find a state space representation

1. Transient – Response Analysis
   1. Step responses(Program 5-2) from the state space representation

Consider multi-input and multi output systems as

Draw the output with input are the unit step functions

* 1. Step responses(Program 5-5) from the transfer function  
     Given the transfer function as

Draw the unit step response

* 1. Output comparisons with various damping ration in second order system(program 5-6)

Given the transfer function as

Draw the outputs as

* 1. Impulse response(program 5-8)

Given the transfer function

Draw the impulse response

* 1. Response with an arbitrary input(program 5-13)

Given the state space representation system

With the input as

* 1. Response with an initial value given.(program 5-16)

Given the state space model with the initial points as

Draw the response to initial conditions