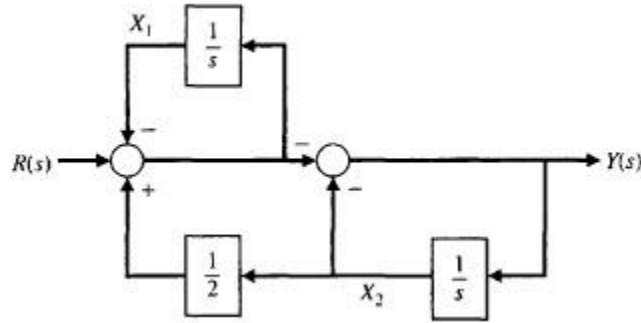


ELET3220 - Control Systems

Assignment 2

Due: Saturday, December 5, 2020

1. For the control system below



Find a suitable State Variable Model in the form of

$$\dot{x}(t) = Ax(t) + Bu(t) \quad y(t) = Cx(t) \quad [8]$$

Determine the characteristic equation [2]

2. A SISO system is described by

$$\dot{x} = \begin{bmatrix} 0 & 1 \\ -3 & -4 \end{bmatrix} x + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u \quad y = [10 \quad 0]x$$

Find the transfer function $G(s) = Y(s)/U(s)$ [6]

Determine the time domain response of the system to a Unit Step input [6]

3. For the Signal Flow Graph below, find the transfer function [8]

