

MCE 441: Introduction to Linear Control Systems
MCE541: Linear Control Systems Homework 1 - Fall 2009

OUT: 08-31-09. DUE: 09-09-09 in class. No homework will be accepted past the due date and time.

1.MCE441. (30 pts) Solve the following problems from Dorf, Ch1. (available on the course website or through the Michael Schwartz Library ECR): E1.12 and P1.19.

1.MCE541. (30 pts) Solve the following problems from Dorf, Ch1. (available on the course website or through the Michael Schwartz Library ECR): E1.7 and P1.7.

2.MCE441 and MCE541 (30 pts) Find the input/output differential equation for the circuit shown in Fig. 1

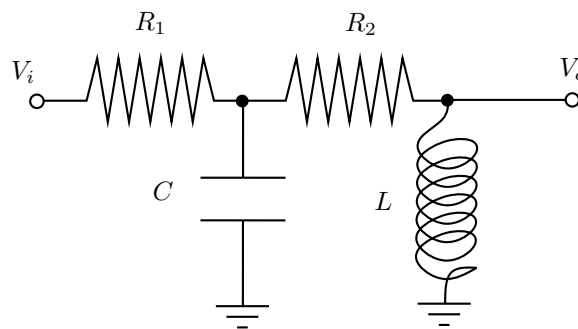


Figure 1: Problem 2

3.MCE441 and MCE541 (40 pts) Find the input/output differential equation for the mechanism shown in Fig. 2. Take the force f_a to be the input and the displacement x to be the output. Assume that all bars are massless and that (viscous) friction exists only in the two dampers. Assume small rotations.

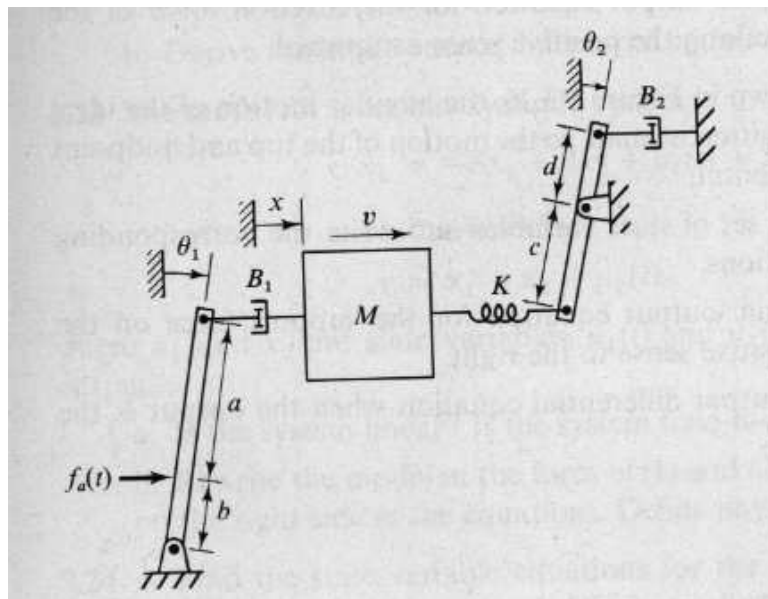


Figure 2: Problem 3