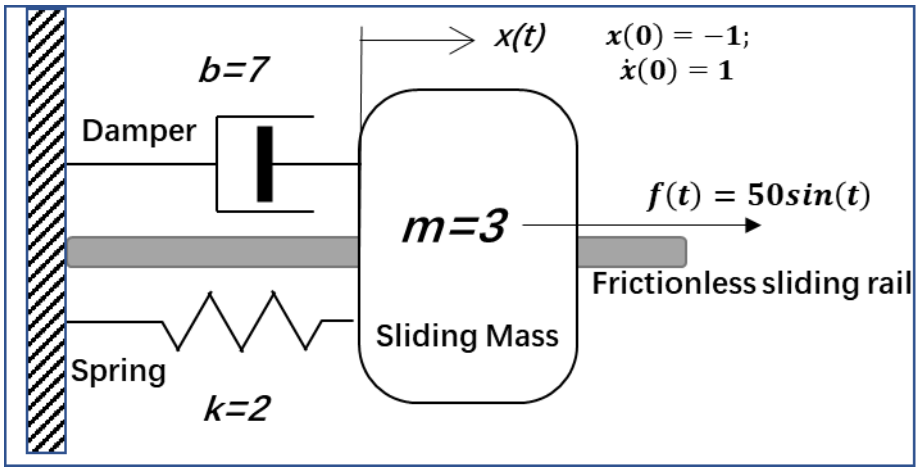
ECE 486: Control Systems Assignment # 01

Issued: Oct 04 Due: Oct 11, 2023

Question 1



a) Write down the dynamic equation in the form of a 2nd order differential equation. (2 points)

b) Write down the state-space equation of the system. (2 points)

c) Express the equation in the s-domain. (4 points)

d) Obtain the system response for the input $f(t)$=50sin(t). (7 points)

Question 2

a) Obtain the impulse response, $x(t)$, of the system with a transfer function (2 points)

$$X(s) = \frac{8s}{4s^2 + 1}$$

b) Show that FVT is not applicable and briefly explain why. (3 points)