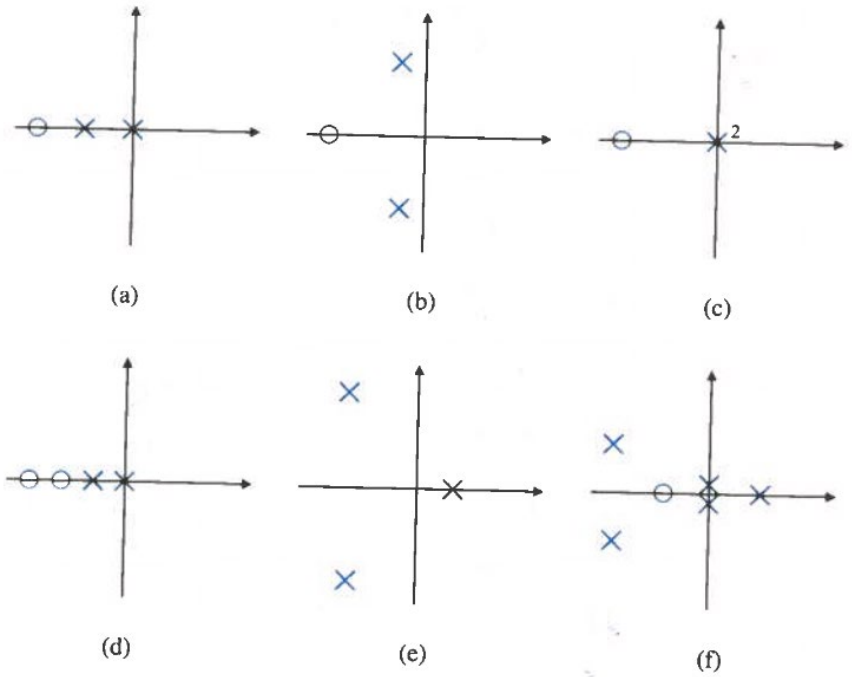
Exercise 1

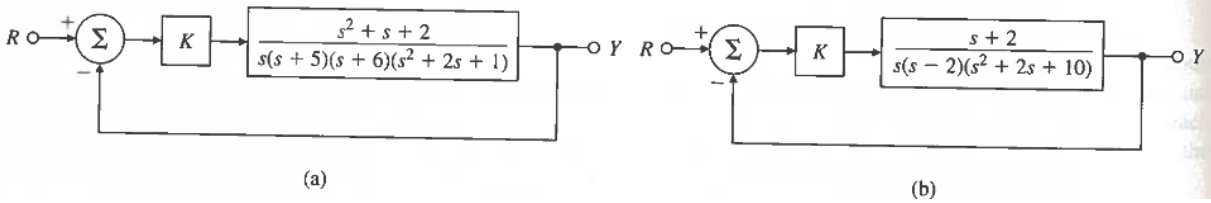
Sketch by hand the root loci for the following systems



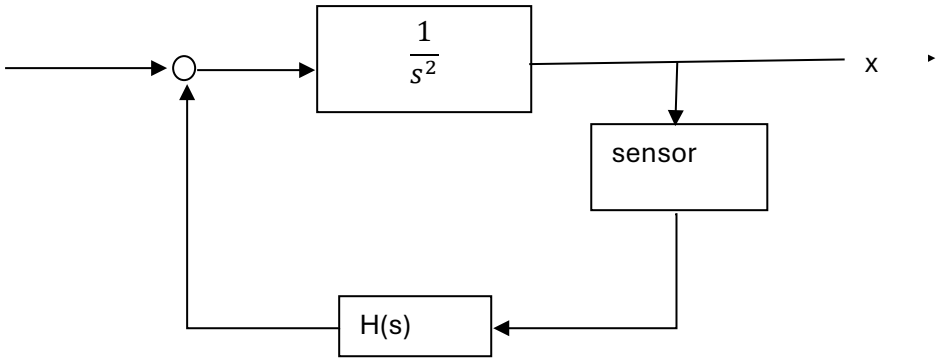
Check using Matlab

Exercise 2

5.11 Use Routh's criterion to find the range of the gain K for which the systems in Fig. 5.53 are unstable, and use the root locus to confirm your calculations.



Exercise 3. A rocket-positioning system can be described as



Show that if the sensor transferfunction =1, the lead compensator $H(s) = K\frac{s+2}{s+4}$ stabilizes the system

Assume that the sensor =$\frac{1}{0.1s+1}$

Using the root locus, find a value for K that will give a maximum damping ration