1. The open-loop transfer function of a unity feedback is

$$G(s)=\frac{K^*(s+2)}{s(s+1)(s+3)}$$

1) Sketch the root loci;

2) Determine a pair of dominant poles and corresponding open-loop gain K when $\zeta=0.5$.

2. The open-loop transfer function is

$$G(s)=\frac{K^*}{s^2(s+2)(s+5)},\quad H(s)=1$$

1) Sketch the root loci and determine the range of K for which the system is stable.

2) If H(s) is changed as $H(s)=2s+1$, sketch the root loci and determine the range of K for which the system is stable.