

**ENME 585 – Control Systems – Assignment 3**

Each of the following plots shows the poles (marked as 'X') and zeros (marked as 'O') of a rational transfer function  $L(s)$ , whose numerator and denominator polynomials are monic. On each plot sketch the root loci of the characteristic equation  $1 + KL(s) = 0$  as  $K$  varies from 0 to  $+\infty$ . Lightly sketch any asymptotes, labeling their angles and intersection with the real axis. Correctly show any angles of departure and arrival. Label any imaginary axis crossings with their (imaginary) values and give the positive range of  $K$  for which the roots of  $1 + KL(s) = 0$  are stable. Show any calculations beside each plot.



