ECE 141 Homework 4

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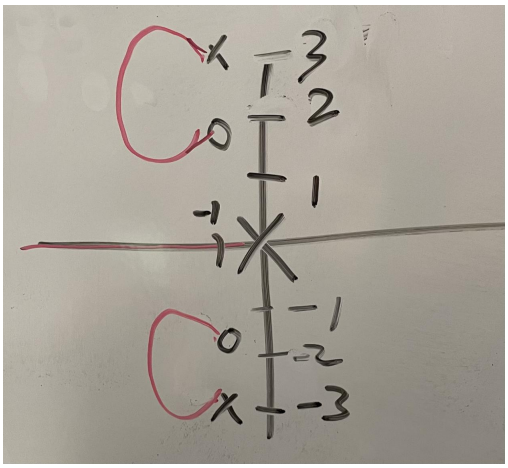
Problem 5.5

(c)

$L(s)$ has zeros at $\frac{-2\pm j2\sqrt{7}}{2}$, and poles at 0 and $\frac{-2\pm j6}{2}$, therefore we have $\alpha = 0$ $\phi_1 = 180°$, And the departure angle for poles $-1 \pm 3j$ is $\pm 161.565°$, And the arival angle for the zeros $-1 \pm \sqrt{7}j$ is $\pm 200°$

Therefore the sketch fo the root locus looks like the following

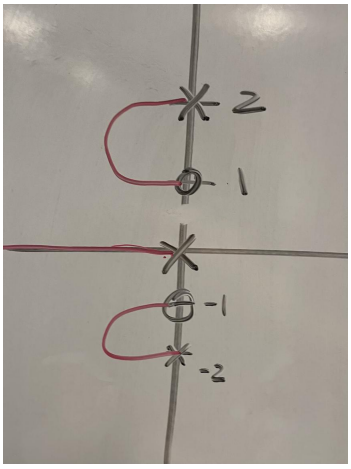


Matlab code to do as well

(e)

$L(s)$ has zeros at $\pm j$, and poles at 0 and $\pm 4j$, therefore we have $\alpha = 0$ $\phi_1 = 180°$, And the departure angle for poles $\pm 2j$ is $180°$, And the arival angle for the zeros $\pm 1j$ is $180°$

Therefore the sketch fo the root locus looks like the following



Matlab code to do as well

Problem 5.7

(c)

This functions has 2 zeros at -3 and 5 poles: 2 at 0, 1 at -10, and 2 at $-3 \pm \frac{5j}{2}$ Therefore $\alpha = -3.333$ and