Maher Saleem 1130258

i)

ans =

 1.000000000000000 -2.100000000000002 5.000000000000004

 1.000000000000000 -0.399999999999998 0.899999999999999

ans =

 1.000000000000000 2.000000000000002 5.000000000000003

 1.000000000000000 -0.200000000000002 0.400000000000001

k =

 0.500000000000000

🡺 $\frac{0.5(1-2z^{-1}-5z^{-2})(1-.04z^{-1}+0.9^{-2})}{(1+2z^{-1}+5z^{-2})(1-0.2z^{-1}+0.4z^{-2})}$



This has three possible ROC

1. 0 < |Z| < 0.63 🡺 left sided
2. 0.63 < |Z| < 2.3 🡺 double sided
3. |Z| > 2.3 🡺 right sided

ii)

ans =

 1.000000000000000 1.196694247234408 4.013394953987231

 1.000000000000000 -0.496694247234408 0.896996194312610

ans =

 1.000000000000000 2.099999999999999 4.000000000000000

 1.000000000000000 0.600000000000014 0

 1.000000000000000 0.399999999999988 0

k =

 1

🡺$\frac{(1+1.19z^{-1}+4z^{-2})(1-0.5z^{-1}+0.89z^{-2})}{(1+2.1z^{-1}+4z^{-2})(1+0.6z^{-1})(1+0.4z^{-1})}$



This has four possible ROC

1. 0 < |Z| < 0.4 🡺 left sided
2. 0.4 < |Z| < 0.6 🡺 double sided
3. 0.6 < |Z| < 1.99 🡺 double sided
4. |Z| > 1.99 🡺 right sided