EIE3123 Quiz 5

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Taking sampling time T = 0.1s,

Graphical user interface, application, table, Excel

Description automatically generatedApplication, table, Excel

Description automatically generated

The closed loop system will become unstable when K > (1.592155/9.1970) = 0.17312,

we choose a K with a damping ratio = 0.0295, so K = (1.5005375/9.1970) = 0.16316.

A new compensator pole z = 1 is added, to maintain the sum of angle to be -180, a zero z = -0.429 is added.

Chart

Description automatically generated with medium confidenceGraphical user interface, application, table, Excel

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Desired Closed-loop pole = 0.3957, 0.88196

The gain of the compensator = 0.8894693\*0.16316 = 0.14512.

Therefore,