

Control Systems - Academic Year 2012-2013 - Third Test

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Consider the transfer function

$$P(s) = \frac{s+2}{(s+1)(s-1)^2},$$

1. Sketch the root locus of $k P(s)$.
2. Compute the breakaway points associated with the root locus of $k P(s)$.
3. Design a feedback controller such that the closed-loop system is bounded input bounded output stable.
4. Use the Routh criterion to establish the values of the gain k for which the closed-loop system is bounded input bounded output stable.
5. Sketch the root locus of the controlled process obtained.

Available time: 40 minutes

Note: At the end of the exam you can decide either to give us your test or not. If you give us your test, your mark obtained in a previous test, regarding this part of the Control System course, is directly replaced by the mark obtained in the current test.