Quiz #7
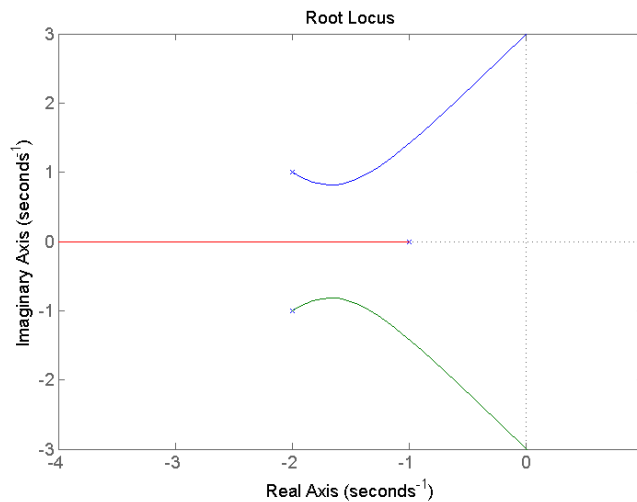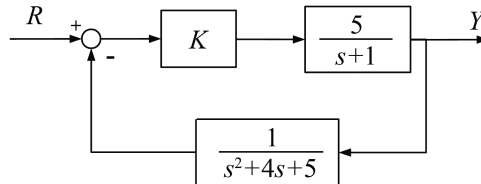
ENGR 4220/5220: Control Systems

Professor Hill

University of Detroit Mercy, Summer 2013

Consider the following negative feedback system and its associated root locus shown below.

1. By varying the value of K, identify on the root locus the theoretically achievable closed-loop pole locations that will provide the minimum settling time for this system's closed-loop step response. You do not need to find actual pole locations, but explain the idea and identify their approximate location(s). Be specific in your explanation.

Problem 2 is on the back.

2. Considering the gain K that achieves the pole location(s) you identified in Part (1), estimate the effect of increasing the gain K further on the system's closed-loop step response. Consider the resulting change in the step response's overshoot, peak time, settle time, and steady-state error.