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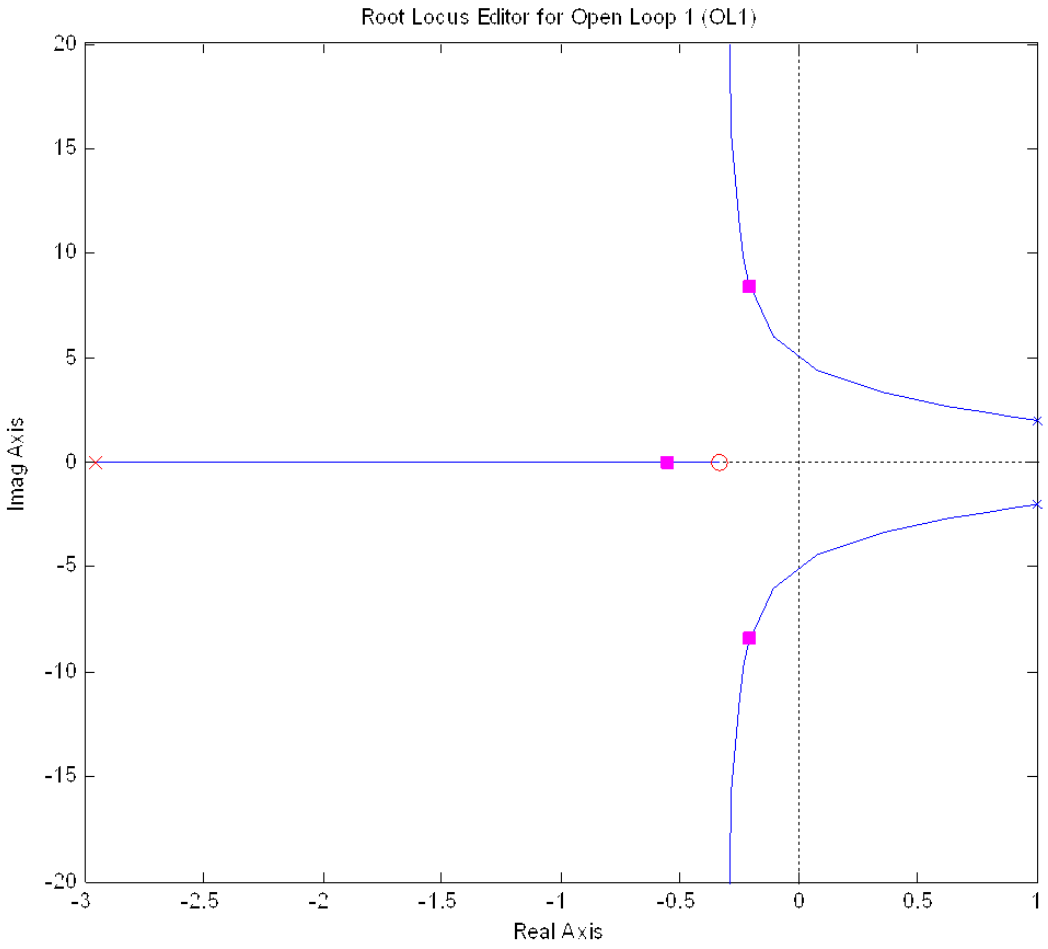
ECE-320, Quiz #5

Problems 1-3 refer to the following root locus plot for a unity feedback system with a plant and a controller.



1) Based on this root locus plot, the best estimate of the poles of the closed loop system are

a) -0.3+j7, -0.3-j7, -0.6 b) 1+j2, 1-j2, and -3

2) Is this a type one system?

a) yes b) no

3) Is this a stable system?

a) yes b) no

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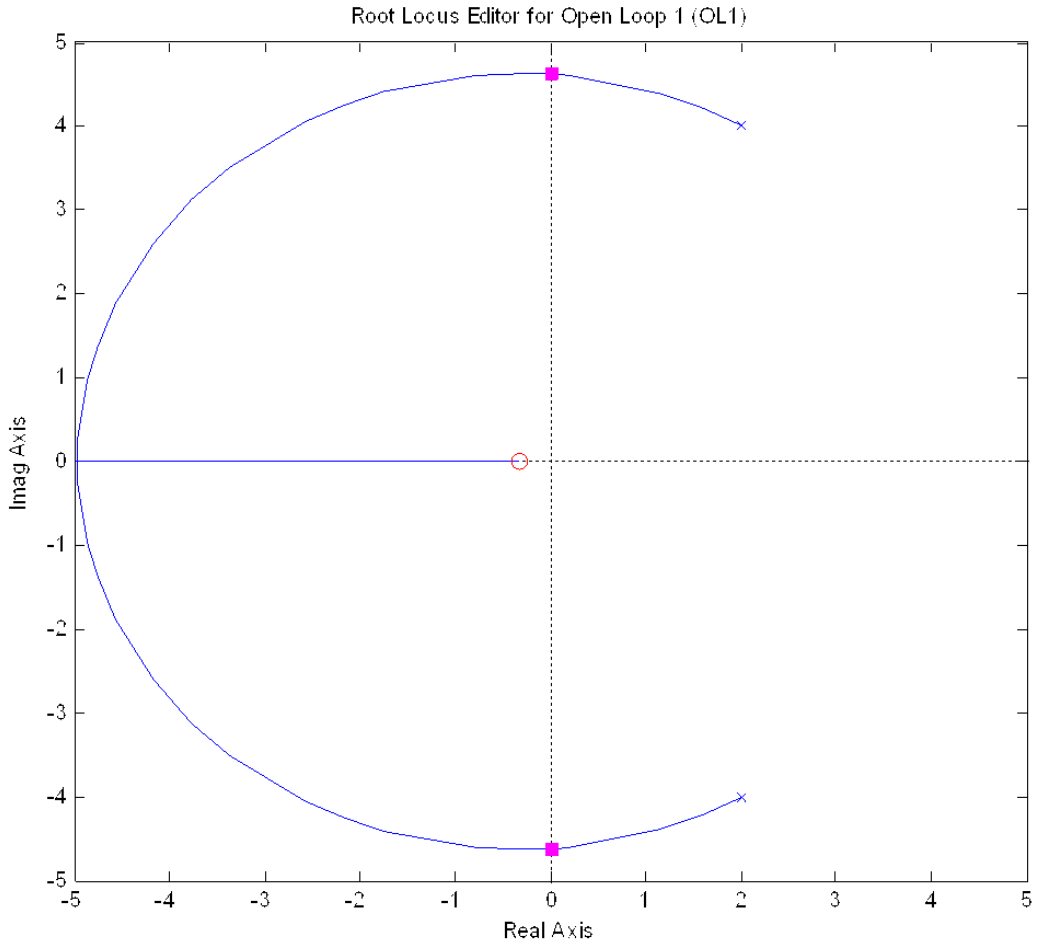
4) Consider the following root locus plot for a plant and controller in a unity feedback configuration.

If we want the system to be stable, should we

a) increase the gain b) decrease the gain c) do nothing



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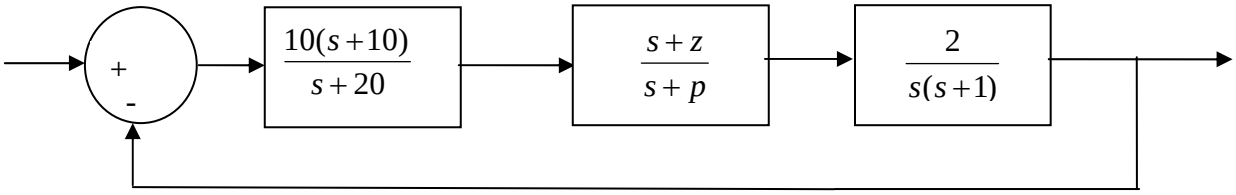
5) Assume we are adding a lag compensator to change the steady state error for a ramp input, as shown below



If we want the **steady state error** for a unit ramp input to be 0.001 and we choose $z = 0.1$, what should p be?

a) 1 b) 0.1 c) 0.01 d) 0.001

6) With the lag compensator in the system (as shown in problem 5) do we expect the **settling time** of the system to

a) increase b) decrease c) remain the same