Handin 1

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Consider the (failed) PI-design in the beginning of Lecture 1.

Use any method you like to find a PI-controller that achieves good robustness and a gain-crossover frequency $\omega_{gc} = 0.1$, or describe why this is not possible.

[Hint: Use the process approximation $P(s) = 1$ when designing the PI-controller. But of course evaluate on the true process !]

Consider the system $P(s) = \dfrac{s+1}{s^2}$. Design a controller with pole-placement where the observer poles and the controller poles have $\omega_0 = 10$ and damping ratio $\zeta_0 = 0.707$. Plot the Nyquist curve of the loop transfer function and the Gang of Four for the closed loop systems obtained. Comment on the design and improve it if needed.

Handin 1 is due before first exercise session