Problem Wk.5.5.4: Analyzing the System

Read the handout for Homework Assignment 2.

Gains

Best Gain

Enter the best value you found for k_c you found for when T = 0.005 seconds. Make sure your answer is accurate to within 0.0001 of the theoretical best gain.

Best value of k_c when T = 0.005 seconds:

Enter the poles associated with these values of k_c and T. If a pole appears n times, enter it into n boxes. If there are more boxes than poles, enter "none" in the remaining boxes.

Rationale

Use the following text box to answer these questions:

- Why must the gain be positive?
- How did you find the best gain?

Regions

Answer the following questions about how the behavior of the system depends on the gain k_c, when $T = 0.005$ If you used empirical methods, make sure your answer is accurate to within 0.0001 of the theoretical best answer.

- For what range of k_c is the system monotonically convergent?

$\square < k_c \leq \square$

- For what range of k_c is the system oscillatory and convergent?
  $\square < k_c < \square$
- What is the lowest positive value of k_c for which the system is unstable?
  k_c = $\square$

Plots

Upload a single PDF containing plots of the following. Clearly label each plot with the value of k_c used to generate the plot.

- The best non-oscillatory response
- An oscillatory but stable response
- An oscillatory, unstable response

Browse... Upload File

Effect of T

In the following textbox, answer these questions:

- What happened when you increased/decreased T?
- Why?

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