Homework #3: Design Specifications and Control Response.


1. Assume you have a plant, \( G(s) = \frac{1}{s+a} \).
   a. What is the frequency response of this plant as per eqn. 3-9 in FPE.
   b. Using what we know about Laplace transforms, the response of this plant to a cosine input is, \( Y(s) = H(s) \times \frac{s}{s^2 + w^2} \). What is \( y(t) \)?
   c. Show that (a) and (b) agree as time, \( t \), approaches infinity (\( t \to \infty \))

2. FPE 3.18.

3. FPE 3.19 (b).

4. FPE 3.22.

5. FPE 3.25.

6. FPE 3.37.

7. FPE 3.39 (b).

8. FPE 3.40 (c).