Homework #3: Design Specifications and Control Response.

**NOTE:** Lecture on Tuesday, 23 Jan 07 is going to be moved to Monday, 22 Jan 07. Location will be posted on the website.

Problems are from *Franklin, Powell, Emami, Feedback Control of Dynamic Systems, 5th Edition* (FPE).

1. Assume you have a plant, $G(s) = 1/(s+a)$.
   a. What is the frequency response of this plant as per eqn. 3-11 in FPE (p. 79).
   b. Using what we know about Laplace transforms, the response of this plant to a cosine input is, $Y(s) = H(s) \times s/(s^2+w^2)$. 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 3.21.

5. FPE 3.24.

6. FPE 3.36.

7. FPE 3.38 (b).

8. FPE 3.39 (c).