

ME 4811

Lab #8: Discrete Time Control

Consider the “Phoenix” equations of motion and your control law design of Labs 2 and 3. Pick a set of closed loop poles for your system and find the corresponding feedback gains. These will probably be the same as in Lab 2 or 3.

Do the following:

1. Discretize the system assuming some sample rate, say 10 Hz. Find the discrete time matrices and the feedback gains that correspond to the appropriate discrete time poles.
2. How do the discrete time gains compare to the continuous gains for different sample rates? Establish the minimum required sample rate for the system so that discrete and continuous time gains are within some pre-specified tolerance, say between 1% and 10%, from each other.