CPN321 T6: Complex dynamics

2019-09-07

1 Numerator dynamics

Create a Jupyter notebook which recreates Figure 5.2 and 5.3 in the textbook. Use `scipy.signal.lti` to calculate the step responses and add a pole zero plot to figure 5.3.

2 Dead time system

Develop a simulation of the system in Example 5.3, simulating the same situation as in the solution presented. Plot your numerical solution of the complete problem without any approximation of dead time on the same graph as the solution derived in the example using approximation.

Implement your own Euler integration loop. For the dead time, you can interpolate on the values from the past using `numpy.interp`.

3 Simulation from data

Next, modify your program to read the value of c_i from the attached file `data.csv`. You can use Pandas to read the file.