For the MATLAB® problems turn in the commented MATLAB® code and the results.

1. For the model given by: \(\ddot{x} - (\mu + 2)\dot{x} + (2\mu + 5)x = 0\):
   a. Find the range of values of \(\mu\) for which the system is stable.
   b. For the case where \(\mu\) makes the system stable what range of values of \(\mu\) make the system underdamped.

2. Use MATLAB® to find the maximum percent overshoot, peak time, 2% settling time, and 100% rise time for the following if the initial conditions are zero.
   \(\ddot{x} + 4\dot{x} + 8x = 2u_s(t)\)

3. Use MATLAB® to find the maximum percent overshoot, peak time, and 100% rise time for the following equation if the initial conditions are zero.
   \(\frac{d^4y}{dt^4} + 14\frac{d^3y}{dt^3} + 127\frac{d^2y}{dt^2} + 426\frac{dy}{dt} + 962y = 926u_s(t)\)