1. A system has a transfer function, G(s) = 100/(s + 50). Find the time constant Tc, settling time Ts, and rise time Tr.
2. For the given transfer function , find the ζ and ωn, also characterize the nature of the response
3. For the system described by the transfer function

Find Tp, %OS, Ts, and Tr.

1. For the given the pole plot, find



-j5=-jωd

j5=jωd

1. Find for a system whose transfer function is
2. Determine the validity of a second-order approximation for each of these two transfer functions:



1. Determine the validity of a second-order step-response approximation for each transfer function shown below



1. Find the output response, c(t), for each of the systems shown in Figure. Also find the time constant, rise time, and settling time for each case.



1. Find the capacitor voltage in the network shown in Figure. If the switch closes at t = 0. Assume zero initial conditions. Also find the time constant, rise time, and settling time for the capacitor voltage.



1. For the system shown in Figure, (a) find an equation that relates settling time of the velocity of the mass to M; (b) find an equation that relates rise time of the velocity of the mass to M.



1. For each of the transfer functions shown below, find the locations of the poles and zeros, plot them on the s-plane, and then write an expression for the general form of the step response without solving for the inverse Laplace transform. State the nature of each response (overdamped, underdamped, and so on)

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1. Write the general form of the capacitor voltage for the electrical network shown in Figure.



1. Solve for x(t) in the system shown in Figure, if f(t) is a unit step.



1. For each of the second-order systems that follow, find

