

ECE 365/460 HW #3

17. For each of the second-order systems below, find ζ , ω_n , T_s , T_p , T_r , and %OS.

a. $T(s) = \frac{120}{s^2 + 12s + 120}$

b. $T(s) = \frac{0.01}{s^2 + 0.002s + 0.01}$

c. $T(s) = \frac{10^9}{s^2 + 6280s + 10^9}$

19. For each pair of second-order system specifications below, find the location of the second-order pair of poles.

a. %OS = 10%; $T_s = 0.5$ second

b. %OS = 15%; $T_p = 0.25$ second

c. $T_s = 5$ seconds; $T_p = 2$ seconds

20. Given the system shown in Figure P4.5, find the location of the poles if the percent overshoot is 30% and the settling time is 0.05 second.

