

Transfer Function	Canonical	Parameters	Performance
$G_1(s) = \frac{0.25}{s^2 + 0.5s + 0.25}$	$G_1(s) = \frac{0.5^2}{s^2 + 2(0.5)(0.5)s + 0.5^2}$  Real: <input type="checkbox"/> Imaginary: <input checked="" type="checkbox"/> Root: $-0.25 \pm 0.43j$	$\omega_n = 0.5$ $\zeta = 0.5$ $K = 1$	$t_r = 2.2/\omega_n = 2.2/0.5 = 4.4 \text{ sec}$ $t_s = 4.6/\zeta\omega_n = 4.6/0.25 = 18.4 \text{ sec}$ %OS = 15%
$G_2(s) = \frac{25}{s^2 + 5s + 25}$	$G_2(s) = \frac{5^2}{s^2 + 2(0.5)(5)s + 5^2}$  Real: <input type="checkbox"/> Imaginary: <input checked="" type="checkbox"/> Root: $-2.5 \pm 4.3j$	$\omega_n = 5$ $\zeta = 0.5$ $K = 1$	$t_r = 2.2/\omega_n = 2.2/5 = 0.44 \text{ sec}$ $t_s = 4.6/\zeta\omega_n = 4.6/2.5 = 1.84 \text{ sec}$ %OS = 15%
$G_3(s) = \frac{10}{(s+1)(s+10)}$	$G_{approx}(s) = \frac{1}{(s+1)}$  Real: <input checked="" type="checkbox"/> Imaginary: <input type="checkbox"/> Root: -1	$\sigma = 1$ $K = 1$	$t_r = 2.2/\omega_n = 2.2/1 = 2.2 \text{ sec}$ $t_s = 4.6/\sigma = 4.6/1 = 4.6 \text{ sec}$
$G_4(s) = \frac{1}{(s+10)}$	$G_4(s) = \frac{1}{10} \frac{10}{(s+10)}$  Real: <input checked="" type="checkbox"/> Imaginary: <input type="checkbox"/> Root: -10	$\sigma = 10$ $K = 1/10$	$t_r = 2.2/\omega_n = 2.2/10 = 0.22 \text{ sec}$ $t_s = 4.6/\sigma = 4.6/10 = 0.46 \text{ sec}$
$G_5(s) = \frac{25}{s^2 + s + 25}$	$G_5(s) = \frac{5^2}{s^2 + 2(0.1)(5)s + 5^2}$  Real: <input type="checkbox"/> Imaginary: <input checked="" type="checkbox"/> Root: $-0.5 \pm 5j$	$\omega_n = 5$ $\zeta = 0.1$ $K = 1$	$t_r = 2.2/\omega_n = 2.2/5 = 0.44 \text{ sec}$ $t_s = 4.6/\zeta\omega_n = 4.6/0.5 = 9.2 \text{ sec}$ %OS = 70%
$G_6(s) = \frac{0.25}{s^2 + s + 0.25}$	$G_6(s) = \frac{0.5^2}{s^2 + 2(1)(0.5)s + 0.5^2}$  Real: <input checked="" type="checkbox"/> Imaginary: <input type="checkbox"/> Root: -0.5, -0.5	$\omega_n = 0.5$ $\zeta = 1$ $K = 1$	$t_r = 2.2/\omega_n = 2.2/0.5 = 4.4 \text{ sec}$ $t_s = 4.6/\zeta\omega_n = 4.6/0.5 = 9.2 \text{ sec}$ %OS = 0%