$$\frac{SY(s)}{R(s)} = \frac{K_p}{s^2 + (1+K_d)s + 1 + K_p}$$

$t_r = 0.88 s = \frac{2.2}{\omega_n}$ $\quad \omega_n = \frac{2.2}{0.88} = \frac{1}{0.4} = 2.5$

$\%OS = 15\% \Rightarrow \zeta = .5$

desired polynomial: $s^2 + 2(.5)(2.5)s + (2.5)^2$

$= s^2 + 2.5s + 6.25$

$1 + K_p = 6.25 \Rightarrow \underline{K_p = 5.25}$

$1 + K_d = 2.5 \Rightarrow \underline{K_d = 1.5}$