

a) $e_{ss} = 0$ to step requires Type 1, which
we already have from $G(s)$ ✓ (actually have Type 2)

b) $t_r < 10 \Rightarrow \frac{2.2}{\omega_n} < 10 \Rightarrow \omega_n > 0.22$
 $\Rightarrow \omega_c > 0.22$

$\%OS < 20\% \Rightarrow \xi > 0.46$
 $\Rightarrow \phi_{PM} > 46^\circ$