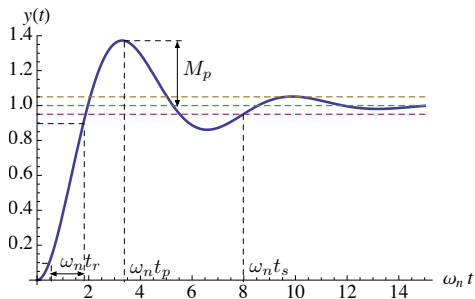


Formulas for TD Specs: Rise Time



Rise time t_r — hard to calculate analytically.

Empirically, on the normalized time scale ($t \rightarrow \omega_n t$), rise times are *approximately* the same

$$\omega_n t_r \approx 1.8 \quad (\text{exact for } \zeta = 0.5)$$

So, we will work with $t_r \approx \frac{1.8}{\omega_n}$ (good approx. when $\zeta \approx 0.5$)