

## Daily Laplace - 4/3

$$\begin{aligned}\mathcal{L}^{-1}\left\{\frac{1}{s^2+2s+10}\right\} &= \mathcal{L}^{-1}\left\{\frac{1}{(s+1)^2+9}\right\} \\ &= \mathcal{L}^{-1}\left\{\frac{1}{s^2+9}\right\}_{s \rightarrow s+1} \\ &= e^{-t} \mathcal{L}^{-1}\left\{\frac{1}{s^2+9}\right\} \\ &= e^{-t} \frac{1}{3} \sin(3t)\end{aligned}$$

$$\begin{aligned}\mathcal{L}^{-1}\left\{e^{-3s} \frac{1}{s^2+2s+10}\right\} &= u_3(t) \cdot \mathcal{L}^{-1}\left\{\frac{1}{s^2+2s+10}\right\}_{t \rightarrow t-3} \\ &= u_3(t) \cdot e^{-t+3} \frac{1}{3} \sin(3t-9)\end{aligned}$$