

$$\begin{aligned} \mathcal{L}\{3f'' - f' + f\} &= 3(s^2F(s) - 2s - 3) - (sF(s) - 2) + F(s) \\ &= (3s^2 - s + 1)F(s) - 6s - 7 \end{aligned}$$

$$\begin{aligned} f(t) \quad \{f(t)\} &= F(s) \quad f(0) = 2 \quad f'(0) = 3 \\ \mathcal{L}(3f'' - f' + f) &= 3(s^2 \cdot F(s) - s f(0) - f'(0)) - (sF(s) - f(0)) + F(s) \\ &= 3 \cdot \underline{s^2 F(s)} - \underline{3s \cdot 2} - \underline{9} - \underline{sF(s)} + \underline{2} + \underline{F(s)} \\ &= \underline{\underline{(3s^2 - s + 1)F(s) - 6s - 7}} \end{aligned}$$