

Exercise 13

Find the inverse Laplace transform of the following:

$$F(s) = \frac{1}{s^2 + 1} + \frac{4}{s^3}$$

Solution

$$\begin{aligned}\mathcal{L}^{-1}\left\{\frac{1}{s^2 + 1} + \frac{4}{s^3}\right\} &= \mathcal{L}^{-1}\left\{\frac{1}{s^2 + 1}\right\} + \mathcal{L}^{-1}\left\{\frac{4}{s^3}\right\} \\ &= \sin x + 2\mathcal{L}^{-1}\left\{\frac{2}{s^3}\right\} \\ &= \sin x + 2x^2\end{aligned}$$