5.02

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$$\begin{cases} y''\theta(t) - 2y'\theta(t) + 2y\theta(t) = 0 \\ y(0) = 0 \quad y'(0) = 1 \end{cases}$$

$$Y(s) = \mathcal{L}(\theta y)$$

$$\begin{cases} \mathcal{L}(\theta y') = s \cdot \mathcal{L}(\theta y) - y(0) = sY \\ \mathcal{L}(\theta y'') = s^2 \cdot \mathcal{L}(\theta y) - sy(0) - y'(0) = s^2 Y - 1 \end{cases} \longleftrightarrow$$

$$\longleftrightarrow \quad s^2 Y - 1 - 2sY + 2Y \Leftrightarrow Y(s^2 - 2s + 2) - 1 \Leftrightarrow$$

$$\Leftrightarrow Y(s) = \frac{1}{s^2 - 2s + 2} = \frac{1}{(s-1)^2 + 1}$$

invers laplacetransform:

$$y(t) = e^{+} \sin(t), \quad + \geq 0$$