

6.11*

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18:55

S. 76

$$\theta(t)y(t) + \int_0^t e^{-(t-\tau)} y(\tau) d\tau = 1 \cdot \theta(t) \Leftrightarrow$$

$$Y = \mathcal{L}(\theta y) \quad y = e^{-t} \quad G = \mathcal{L}(\theta y)$$

$$\Leftrightarrow Y + GY = \mathcal{L}(\theta(t)) \Leftrightarrow$$

$$\Leftrightarrow Y \left(1 + \frac{1}{s+1}\right) = \frac{1}{s} \Leftrightarrow$$

$$\Leftrightarrow Y \cdot \frac{s+2}{s+1} = \frac{1}{s} \Leftrightarrow$$

$$\Leftrightarrow Y(s) = \frac{s+1}{s(s+2)} = \frac{A}{s} + \frac{B}{s+2} =$$

$$= \frac{1}{2} \cdot \frac{1}{s} + \frac{1}{2} \cdot \frac{1}{s+2}$$

$$y(t) = \frac{1}{2} (1 + e^{-2t}) \theta(t)$$

$$\underline{y(t) = \frac{1}{2} (1 + e^{-2t}), \quad t \geq 0}$$