

4.04*

lördag 3 februari 2024

11:33

$$a) \frac{s}{s^2 + 6s + 8} = \frac{s}{(s+4)(s+2)} = \frac{A}{s+4} + \frac{B}{s+2} =$$

$$= \frac{2}{s+4} - \frac{1}{s+2}$$

$$\left. \begin{aligned} 2e^{-4t}\theta(t) &\rightarrow \frac{2}{s+4} \\ -e^{-2t}\theta(t) &\rightarrow -\frac{1}{s+2} \end{aligned} \right\} \underline{(2e^{-4t} - e^{-2t})\theta(t)}$$

$$s = A(s-2) + B(s-4)$$

$$\begin{cases} A+B=1 \rightarrow A=1-B \\ -2A-4B=0 \end{cases}$$

$$\underline{-2 + 2B - 4B = 0 \Leftrightarrow -2B = 2 \quad B = -1}$$

$$A = 2$$

$$b) \frac{s}{s^2 + 6s + 10} = \frac{s}{(s+3)^2 + 1} = \frac{s+3}{(s+3)^2 + 1} - \frac{3}{(s+3)^2 + 1}$$

$$e^{-3t}(\cos t)\theta(t) \rightarrow \frac{s+3}{(s+3)^2 + 1}$$

$$-3e^{-3t}(\sin t)\theta(t) \rightarrow -\frac{3}{(s+3)^2 + 1}$$

$$\underline{(1 + -3\sin t)e^{-3t}\theta(t)}$$