

**13.11** Given the following functions  $F(s)$ , find  $f(t)$ . **PSV**

$$(a) \quad F(s) = \frac{s + 1}{(s + 2)(s + 6)}$$

$$(b) \quad F(s) = \frac{24}{(s + 2)(s + 3)}$$

SOLUTION:

$$a) \quad F(s) = \frac{K_1}{s+2} + \frac{K_2}{s+6} \quad \begin{cases} K_1 = \frac{-2+1}{-2+6} = -1/4 \\ K_2 = \frac{-6+1}{-6+2} = 5/4 \end{cases}$$

$$F(s) = \frac{5/4}{s+6} - \frac{1/4}{s+2}$$

$$f(t) = \left( \frac{5}{4} e^{-6t} - \frac{1}{4} e^{-2t} \right) u(t)$$

$$b) \quad F(s) = \frac{K_1}{s+2} + \frac{K_2}{s+3} \quad \begin{cases} K_1 = \frac{24}{-2+3} = 24 \\ K_2 = \frac{24}{-3+2} = -24 \end{cases}$$

$$F(s) = \frac{24}{s+2} - \frac{24}{s+3}$$

$$f(t) = (24e^{-2t} - 24e^{-3t}) u(t)$$