

**13.31** Find the inverse Laplace transform of the following functions.

$$(a) \quad F(s) = \frac{(s+2)e^{-s}}{s(s+2)}$$

$$(b) \quad F(s) = \frac{e^{-10s}}{(s+2)(s+3)}$$

**SOLUTION:**

$$a) \quad F(s) = \frac{e^{-s}}{s} \Rightarrow f(t) = u(t-1)$$

$$b) \quad F(s) = e^{-10s} \left[ \frac{k_1}{s+2} + \frac{k_2}{s+3} \right] \quad \begin{array}{l} k_1 = 1 \\ k_2 = -1 \end{array}$$

$$F(s) = e^{-10s} \left[ \frac{1}{s+2} - \frac{1}{s+3} \right] \Rightarrow f(t) = \left\{ e^{-2[t-10]} - e^{-3[t-10]} \right\} u(t-10)$$