

13.30 Find the inverse Laplace transform of the following functions. **CS**

$$(a) \quad F(s) = \frac{e^{-s}}{s+1}$$

$$(b) \quad F(s) = \frac{1 - e^{-2s}}{s}$$

$$(c) \quad F(s) = \frac{1 - e^{-s}}{s+2}$$

SOLUTION:

$$a) \quad \text{Let } G(s) = \frac{1}{s+1} \Rightarrow g(t) = e^{-t} u(t)$$

$$F(s) = e^{-s} G(s) \Rightarrow f(t) = g(t-1) u(t-1)$$

$$\boxed{f(t) = e^{-(t-1)} u(t-1)}$$

$$b) \quad G(s) = \frac{1}{s} \Rightarrow g(t) = 1 u(t) \quad F(s) = G(s) - e^{-2s} G(s)$$

$$\boxed{f(t) = 1 u(t) - 1 u(t-2)}$$

$$c) \quad G(s) = \frac{1}{s+2} \Rightarrow g(t) = e^{-2t} u(t) \quad F(s) = G(s) - e^{-s} G(s)$$

$$\boxed{f(t) = e^{-2t} u(t) - e^{-2(t-1)} u(t-1)}$$