13FE-1 The output function of a network is expressed using Laplace transforms, in the following form.

$$\mathbf{V}_o(s) = \frac{12}{s(s^2 + 3s + 2)}$$

Find the output $v_o(t)$ as a function of time.

SOLUTION:

$$V_o(s) = \frac{K_1}{s} + \frac{K_2}{s+1} + \frac{K_3}{s+2}$$

$$K_1 = \frac{12}{2} = 6 \qquad K_2 = \frac{12}{-1} = -12 \qquad K_3 = \frac{12}{(-2)(-1)} = 6$$

$$V_o(s) = \frac{6}{s} - \frac{12}{s+1} + \frac{6}{s+2}$$

$$\boxed{v_o(t) = [6 - 12e^{-t} + 6e^{-2t}]\,u(t)}$$