

(7)

$$Y = \frac{6}{s^2(s+2)} - \frac{2}{s+2}$$

Consider P.F. $\frac{6}{s^2(s+2)} = \frac{A}{s} + \frac{B}{s^2} + \frac{C}{s+2}$

$$\Rightarrow 6 = As(s+2) + B(s+2) + Cs^2$$

$$s = -2 \Rightarrow C = 6/4 = 3/2$$

$$s = 0 \Rightarrow 2B = 6 \Rightarrow B = 3$$

and we note $A + C = 0 \Rightarrow A = -C = -3/2$

$$\therefore \frac{6}{s^2(s+2)} = \frac{-3}{2s} + \frac{3}{s^2} + \frac{3}{2(s+2)}$$

$$\Rightarrow Y = -\frac{3}{2s} + \frac{3}{s^2} - \frac{1}{2(s+2)}$$

$$\Rightarrow \boxed{y(t) = -\frac{3}{2} + 3t - \frac{1}{2}e^{-2t}}$$

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