∴ Solution of I.V.P

$$y = \frac{1}{x^5} + \frac{2}{x} - \frac{1}{x} + \frac{4\ln x}{x} = \frac{1}{x} + \frac{1}{x^5} + \frac{4\ln x}{x}$$

1

(18)

4(a)

$$\mathcal{L}\{\sin(3t)\} = \frac{3}{s^2+9} \Rightarrow \mathcal{L}\{e^{-2t}\sin(3t)\} = \frac{3}{(s+2)^2+9}$$

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Now

$$\mathcal{L}\{t\sinh t\} = -\frac{d}{ds}\left\{\frac{1}{s^2-1}\right\} = \frac{2s}{(s^2-1)^2}$$

$$\therefore \mathcal{L}\left\{\int_0^t \tau \sinh\tau\, d\tau\right\} = \frac{2}{(s^2-1)^2}$$

4

Thus $$\mathcal{L}\left\{e^{-2t}\sin(3t) + \int_0^t \tau\sinh\tau\, d\tau\right\} = \frac{3}{(s+2)^2+9} + \frac{2}{(s^2-1)^2}$$

1

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