

$$\begin{aligned}\sin x + x \cos x &= (x)' \sin x + x (\sin x)' & \text{لدينا :} \\ &= (x \sin x)'\end{aligned}$$

$$\begin{aligned}I_1 &= \int_0^{\frac{\pi}{2}} (\sin x + x \cos x) dx & \text{إذن :} \\ &= [x \sin x]_0^{\frac{\pi}{2}} \\ &= \frac{\pi}{2}\end{aligned}$$

$$\begin{aligned}e^x + x e^x &= (x)' e^x + x (e^x)' & \text{لدينا :} \\ &= (x e^x)'\end{aligned}$$

$$\begin{aligned}I_2 &= \int_0^{\ln 2} (e^x + x e^x) dx & \text{إذن :} \\ &= [x e^x]_0^{\ln 2} \\ &= 2 \ln 2\end{aligned}$$

$$\ln x + 1 = (x)' \ln x + x \cdot (\ln x)' = (x \ln x)' \quad \text{لدينا :} *$$

$$\begin{aligned}I_3 &= \int_1^e (1 + \ln x) dx & \text{إذن :} \\ &= [x \ln x]_1^e \\ &= e & \text{لدينا :} *\end{aligned}$$

$$\begin{aligned}\sqrt{x+1} + \frac{x}{2\sqrt{x+1}} &= (x)' \sqrt{x+1} + x (\sqrt{x+1})' \\ &= (x \sqrt{x+1})'\end{aligned}$$

$$\begin{aligned}I_4 &= \int_0^3 \left(\sqrt{x+1} + \frac{x}{2\sqrt{x+1}} \right) dx & \text{إذن :} \\ &= [x \sqrt{x+1}]_0^3 \\ &= 6\end{aligned}$$

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