Find the integral with respect to

x:∫(exx)(ex1)dx

Solution

$$\int x \cdot e^x \cdot e^{x+1} dx = e \int x \cdot e^{2x} dx = e \int x \frac{d(e^{2x})}{2} = e \left(\frac{xe^{2x}}{2} - \frac{1}{2} \int e^{2x} dx \right)$$

$$= \frac{e}{2} \left(xe^{2x} - \frac{e^{2x}}{2} + C \right) = \frac{e}{2} \left(xe^{2x} - \frac{e^{2x}}{2} \right) + C_0$$

In this task the next rule (integration by parts) were used :

$$\int u \cdot dv = u \cdot v - \int v \cdot du$$