$$\int_a^b u \cdot dv = u \cdot v \Big|_a^b - \int_a^b v \cdot du$$

$$\textcircled{I} = \int \underbrace{x}_{u} \underbrace{e^{3x} dx}_{dv} = x \frac{e^{3x}}{3} - \int \frac{1}{3} e^{3x} dx \; ;$$

$$\textcircled{I} = \frac{x e^{3x}}{3} - \frac{1}{3} \cdot \frac{1}{3} e^{3x} \; ;$$

$$\boxed{\textcircled{I} = \left\{ \frac{x}{3} - \frac{1}{9} \right\} e^{3x}}$$

$u = x$

$du = dx$

$dv = e^{3x} dx$

$\int dv = \int e^{3x} dx$

$v = \frac{1}{3} e^{3x}$