

$\int x e^x dx =$ An indefinite integral of x times e to the power of x , dx



$$\left. \begin{array}{l} g(x) = x \\ f'(x) = e^x \end{array} \right\} \begin{array}{l} \text{1}^\circ g'(x) = 1 \\ \text{2}^\circ f(x) = e^x \end{array}$$

I will use the method of parts.
I choose $g(x)$ to be x and $f'(x)$ to be e^x . This way $g'(x)$ is equal 1 and $f(x)$ is equal e^x

$$= x \cdot e^x - \int e^x \cdot 1 dx =$$

Now I will multiply it crosswise (see arrow 1^o in the previous step) and subtract an indefinite integral containing the result of vertical multiplication (see arrow 2^o in the previous step)

$$= x \cdot e^x - e^x + c$$

Finally we have to know the integration formulas to compute the integral of e to the power of x . The result is x times e to the power of x minus e to the power of x plus a constant c .

! DON'T FORGET ABOUT THE CONSTANT!