

Notation for Definite Integrals

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with substitution:

$$\int_2^3 x e^{x^2} dx$$

$$\left. \begin{aligned} \text{let } u &= x^2 \\ du &= 2x dx \\ \frac{du}{2} &= x dx \end{aligned} \right\}$$

$$= \int_4^9 e^u du$$

$$= \left. \frac{e^u}{2} \right|_4^9$$

$$= \frac{e^9}{2} - \frac{e^4}{2}$$

or

$$\int_{x=2}^{x=3} e^u du$$

or

$$\left. \frac{e^u}{2} \right|_{x=2}^{x=3}$$

or

$$\left. \frac{e^{x^2}}{2} \right|_2^3$$

etc