

## Derivatives and Integrals of Exponentials

Example #1:

Find  $\frac{dy}{dx}$  if  $y = x^3 e^x$ .

Example #2: Let  $y = \sin(e^x)$ .

Example #3: Find  $\frac{dy}{dx}$ .

$$y = \frac{e^x - e^{-x}}{e^x + e^{-x}}$$

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Example #4:

$$\int e^{4x} dx$$

Example #5:

$$\int e^{\tan(x)} \sec^2(x) dx$$

Example #6:

$$\int (x + 3) \exp(x^2 + 6x) dx$$

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Example #7:

$$\int_1^{\sqrt{2}} x 4^{-x^2} dx$$