0.1 Differentiating e^x

0.1.1 Intro

We have
$$e^x = \sum_{i=0}^{\infty} \frac{x^i}{i!}$$

$$\frac{\delta}{\delta x}e^x = \frac{\delta}{\delta x} \sum_{i=0}^{\infty} \frac{x^i}{i!}$$

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$$\frac{\delta}{\delta x}e^x = \sum_{i=1}^{\infty} \frac{\delta}{\delta x} \frac{x^i}{i!}$$

$$\delta x e^{x} = \sum_{i=0}^{\infty} \delta x i!$$

$$\frac{\delta}{\delta x} e^{x} = \sum_{i=1}^{\infty} \frac{\delta}{\delta x} \frac{x^{i}}{i!}$$

$$\frac{\delta}{\delta x} e^{x} = \sum_{i=0}^{\infty} \frac{x^{i-1}}{(i-1)!}$$

$$\frac{\delta}{\delta x} e^{x} = \sum_{i=0}^{\infty} \frac{x^{i}}{i!}$$

$$\frac{\delta}{\delta x} e^{x} = e^{x}$$

$$\frac{\delta}{\delta x}e^x = \sum_{i=0}^{\infty} \frac{x^i}{i!}$$

$$\frac{\delta}{\delta x}e^x = e^x$$