

**Problem 1)** The chain rule of differentiation is written as follows:

$$\frac{d}{dx}f[g(x)] = g'(x)f'[g(x)]. \quad (1)$$

Therefore, considering that  $(e^x)' = e^x$ , we will have

$$\frac{d}{dx}(e^{e^x}) = (e^x)(e^{e^x}). \quad (2)$$

$$\frac{d}{dx}(e^{e^{e^x}}) = (e^x)(e^{e^x})(e^{e^{e^x}}). \quad (3)$$

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