Differential Equation

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LaTeX

1 Formal Definition

An differential equation is an equation that relates one or more functions and their derivatives.

$$\text{General } \mathbb{FORM}: \sum_{n=1}^{N} \prod_{i=m_n}^{m_{n+1}} f_{k_i}^{(k_i)}(x) = 0$$

2 Forms in H2 Math

2.1 First Order Separable

$$\frac{\mathrm{d}y}{\mathrm{d}x} = f(x)g(y) \iff \int \frac{1}{g(y)}\,\mathrm{d}y = \int f(x)\,\mathrm{d}x$$

2.2 Second Order

$$\frac{\mathrm{d}^2y}{\mathrm{d}x^2} = f(x) \iff y = \int \left(\int f(x)\,\mathrm{d}x \right) \mathrm{d}x$$