Classification of Differential Equations

Definition: An ordinary differential equation (ODE) is a DE which only contains ordinary derivatives.
(ONE INdependent variable)

Definition: A partial differential equation (PDE) is a DE which contains partial derivatives.
(TWO or more INdependent variables)

Definition: A vector differential equation is a set of two or more differential equations describing two or more unknown functions.
(TWO or more DEPendent variables)

Definition: The order of a differential equation is the order of the highest derivative in the equation.

General n^{th} order equation in Standard Form:

$$\frac{d^n y}{dx^n} = f\left(x, y, \frac{dy}{dx}, \frac{d^2 y}{dx^2}, ..., \frac{d^{(n-1)} y}{dx^{(n-1)}}\right) \tag{1}$$

Definition: A linear differential equation is one in which f is linear in y and all the derivatives of y.

Otherwise, the equation is nonlinear.