Definition (Continuous-time dynamical system). A dynamical system on $\mathbb{R}^n$ may be defined by a function

$$f : \mathbb{R}^n \to \mathbb{R}^n.$$

A trajectory of a dynamical system is a function $x : \mathbb{R} \to \mathbb{R}^n$ such that

$$\dot{x}(t) = f(x(t)).$$

We use the notation $\dot{x}$ to abbreviate $\mathrm{d}x/\mathrm{d}t$.