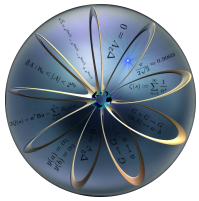

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maximal interval of existence of ordinary differential equations

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Let $E \subset W$ where W is a normed vector space, $f \in C^1(E)$ is a continuous differentiable map $f : E \to W$. Furthermore consider the ordinary differential equation

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

with the initial condition

$$x(0) = x_0.$$

For all $x_0 \in E$ there exists a unique solution

$$x : I \to E$$

where $I = [-a, a]$, which also satify the initial condition of the initial value problem. Then there exists a maximal interval of existence $J = (\alpha, \beta)$ such that $I \subset J$ and there exists a unique solution

$$x : J \to E.$$