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omega limit set

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Synonym	ω -limit set
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Related topic	LimitCycle
Defines	alpha limit set

Let $\Phi(t, x)$ be the flow of the differential equation $x' = f(x)$, where $f \in C^k(M, \mathbb{R}^n)$, with $k \geq 1$ and M an open subset of \mathbb{R}^n . Consider $x \in M$.

The omega limit set of x , denoted $\omega(x)$, is the set of points $y \in M$ such that there exists a sequence $t_n \rightarrow \infty$ with $\Phi(t_n, x) = y$.

Similarly, the alpha limit set of x , denoted $\alpha(x)$, is the set of points $y \in M$ such that there exists a sequence $t_n \rightarrow -\infty$ with $\Phi(t_n, x) = y$.

Note that the definition is the same for more general dynamical systems.