

limits of a sequence



converges

diverges

limits of a sequence

A sequence $\{a_n\}$ has limit L if we can make the terms a_n as close as we like to L by taking n sufficiently large. We denote this by

$$\lim_{n \rightarrow \infty} a_n = L$$

or

$$a_n \rightarrow L \text{ as } n \rightarrow \infty$$

- If $\lim_{n \rightarrow \infty} a_n$ exists (is finite), then the series **converges**, otherwise it **diverges**
- Graphically:
If $\lim_{n \rightarrow \infty} a_n = L$ the graph of the sequence $\{a_n\}_{n=1}^{\infty}$ has a unique horizontal asymptote $y = L$

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