Real Analysis Theorems

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1 Power Series

Given power series $\sum_{n=0}^{\infty} a_n x^n$

Theorem 1. *Given any (a_n), one of the following holds true:*

1. *The power series converges for all $x \in \mathbb{R}$*

2. *The power series converges only for $x = 0$*

3. *The power series converges for all x in some bounded interval centered at 0; the interval may be open, half-open or closed.*