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Abel’s limit theorem

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Suppose that $\sum a_n x^n$ has a radius of convergence r and that $\sum a_n r^n$ is convergent. Then

$$\lim_{x \rightarrow r^-} \sum a_n x^n = \sum a_n r^n = \sum \left(\lim_{x \rightarrow r^-} a_n x^n \right)$$