Source: ⟦KBhMATH401SubIndex⟧

1 | **Series Convergence**

In $\sum_{k=0}^{\infty} a(r^k)$, where $|r| < 1$, $\sum_{k=0}^{\infty} a(r^k) = \frac{a}{1-r}$

In $\sum_{k=0}^{n} a(r^k)$, $\sum_{k=0}^{n} a(r^k) = \frac{a - ar^{n+1}}{1-r}$

If the intergral to infinity is convergent, the sequence is convergent as long as the sequence is continuous, positive, and decreasing. The inverse applies, too.

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Provided that $a_n, b_n \geq 0$ & $a_n \leq b_n$