

 Info

This note, that [was found here](#), as a part of [a collection](#) is written (completely with human hands) by [Rupadarshi Ray](#), was created on May 2, 2026 12:55:25 AM, was last modified on May 2, 2026 1:11:13 AM, and was exported on September 7, 2026 2:50:34 PM.

$$\frac{1}{1-z}$$

#wiki/genfx

Consider the infinite sum called the **geometric series**

$$1 + z + z^2 + \dots$$

if we multiply with $-z$ and add it with itself

$$\begin{array}{r} 1 + z + z^2 + \dots \\ -z - z^2 \\ \hline 1 \end{array}$$

Therefore

$$(1 - z)(1 + z + z^2 + \dots) = 1$$

which shows $1 + z + z^2 + \dots \in \mathbb{C}[[z]]$ is an unit and

$$\frac{1}{1 - z} = 1 + z + z^2 + \dots$$

Current note has 0 direct children and 0 total descendants.

- [squishy](#)
 - [rat](#)
 - $\frac{1}{1-z}$

And it has 3 siblings.

- [squishy](#)
 - [rat](#)
 - $(X, Y) \mapsto \left(\frac{1+X^2}{1-X^2}, \frac{2XY}{(1-X^2)^3}\right)$
 - $\frac{z}{z^2-1} = \frac{z}{(z+1)(z-1)}$
 - $\frac{1}{1-z}$