

 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 April 2, 2024 5:13:15 PM, was last modified on April 13, 2026 7:55:38 PM, and was exported on September 7, 2026 2:50:34 PM.

$$\frac{z}{z^2-1} = \frac{z}{(z+1)(z-1)}$$
$$\frac{z}{z^2-1} = \begin{cases} \sum_{n \geq 0} \frac{1}{z^{2n+1}} & |z| > 1 \\ -\sum_{n \geq 0} z^{2n+1} & |z| < 1 \end{cases}$$

where the left hand side is defined on  $\mathbb{C} \setminus \{-1, 1\}$

```
from script_complexfunccolor import *

ab = (-np.pi, np.pi)
cd = (-5, 5)

width = 6
height = width * (cd[1] - cd[0]) / (ab[1] - ab[0])

plt.figure(figsize=(width, height))
f = lambda z: z/(z**2-1)
plot_domain(domaincol_m, f, re=ab, im=cd, title='$f(z)=\\frac{z}{z^2-1}$', daxis=True)
plt.tight_layout()
plt.show()
```

Current note has 0 direct children and 0 total descendants.

- [squishy](#)
  - [rat](#)
    - $\frac{z}{z^2-1} = \frac{z}{(z+1)(z-1)}$

And it has 3 siblings.

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