In a neighborhood of infinity we have

$$\log(1-z) = \log(-z) - \sum_{q\geq 1} \frac{1}{q z^q}$$

$$\log(1+z) = \log(z) - \sum_{q\geq 1} \frac{(-1)^q}{q z^q}$$

I don't understand these two expressions

I know

$$\log(1/z) = -\log z$$

$$\log(1-z) = \log\left(\frac{z-1}{z}\right) = \log(z-1) - \log z$$

Can you explain??