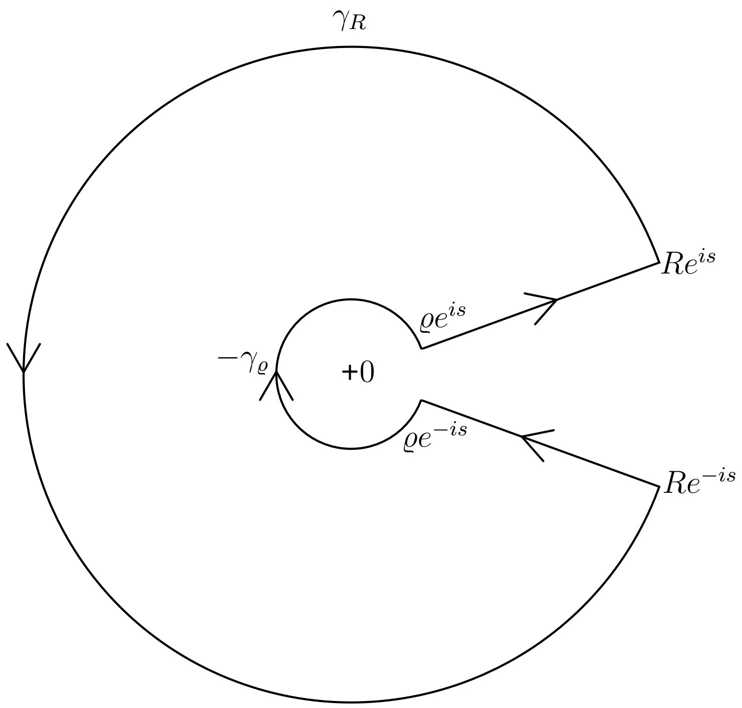
γ_R
Re^{is}
ϱe^{is}
$-\gamma_\varrho$
$+0$
ϱe^{-is}
Re^{-is}

$$\int_{dr}^{\mathbb{R}_+} {}^{r}\rceil \log r^{n}$$

$$\begin{cases} z = \exp(it)\, r \\ 0 < t < 2\pi \end{cases} \Rightarrow \begin{cases} -z = \exp(i(t-\pi))\, r \\ -\pi < t - \pi < \pi \end{cases} \Rightarrow \log(-z) = \log r + i(t-\pi)$$

$$\overbrace{\log(-z)}^{2} = \log^{2} r + \underbrace{\overbrace{t-\pi}^{2}}_{\text{bes}} \leqslant N \log^{2} r$$

$$\overline{{}^{z}\rceil z^{2}} \leqslant M \Rightarrow \overline{\int_{dz/2\pi}^{\exp(\varepsilon i)\, R \mid \exp(-\varepsilon i)\, R} {}^{z}\rceil \log(-z)} \leqslant RN \log R \frac{M}{R^{2}} = MN \frac{\log R}{R} \underset{R \rightsquigarrow \infty}{\rightsquigarrow} 0$$

$$\overline{{}^{z}\rceil} \leqslant M \Rightarrow \overline{\int_{dz/2\pi}^{\exp(\varepsilon i)\, \varrho \mid \exp(-\varepsilon i)\, \varrho} {}^{z}\rceil \log(-z)} \leqslant \varrho N \log(1/\varrho) = N \frac{\log(1/\varrho)}{1/\varrho} \underset{\varrho \rightsquigarrow 0}{\rightsquigarrow} 0$$

$$dz = \exp(it)\, dr$$

$$\log(-z) = \log r + i(t-\pi) \underset{t \nearrow 2\pi}{\overset{t \searrow 0}{\rightsquigarrow}} \begin{cases} \log r - \pi i \\ \log r + \pi i \end{cases} \Rightarrow \int_{dz} \log(-z)\, {}^{z}\rceil \rightsquigarrow -2\pi i \int_{dr}^{\mathbb{R}_+} {}^{r}\rceil$$

$$\log(-z)^{2} \rightsquigarrow \begin{cases} \log^{2} r - \pi^{2} - 2\pi i \log r & t \searrow 0 \\ \log^{2} r - \pi^{2} + 2\pi i \log r & t \nearrow 2\pi \end{cases} \Rightarrow \int_{dz} {}^{z}\rceil \log^{2}(-z) \rightsquigarrow -2\pi i \int_{dr}^{\mathbb{R}_+} {}^{r}\rceil \log r$$

$$\int_{dr/\pi}^{\mathbb{R}_+} \frac{\log r}{(1+r)^{3}} = -\frac{1}{2}$$

$$\int_{dr/\pi}^{\mathbb{R}_+} \frac{\log r}{\left(1+r^{2}\right)^{2}} = -\frac{1}{4}$$

$$\int_{dr/\pi}^{\mathbb{R}_+} \frac{\log r}{\left(1+r^{2}\right)\left(4+r^{2}\right)}$$

$$\int_{dr/\pi}^{\mathbb{R}_+} \begin{cases} \dfrac{\log r}{1+r^2} = 0 \\ \dfrac{\log^3 r}{1+r^2} = 0 \\ \dfrac{\log^2 r}{1+r^2} = \dfrac{\pi^2}{8} \\ \dfrac{\log^4 r}{1+r^2} \end{cases}$$