

四、共形映射

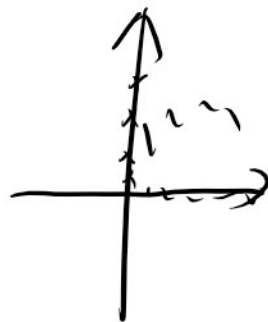
$\frac{1}{4}$ 圆 \rightarrow 单位圆



$$\eta_1 = z^2$$

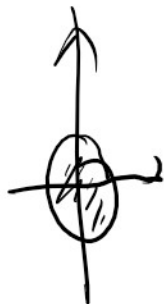


$$\eta_2 = -\frac{\eta_1 - 1}{\eta_1 + 1}$$

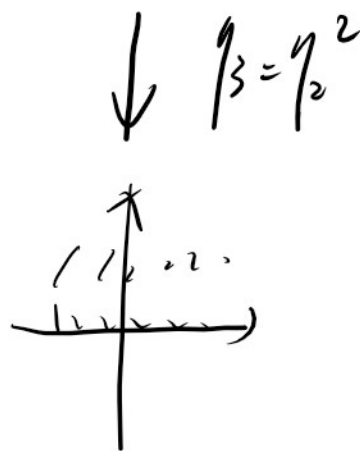


$$\text{取 } w = \frac{\left(\frac{z^2-1}{z^2+1}\right)^2 - 1}{\left(\frac{z^2-1}{z^2+1}\right)^2 + i}$$

$$= \frac{(z^2-1)^2 - i(z^2+1)^2}{(z^2-1)^2 + i(z^2+1)^2}$$

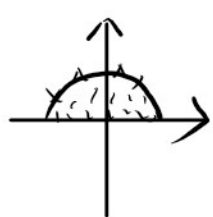


$$\eta_4 = \frac{\eta_3 - i}{\eta_3 + i}$$



半圆 \rightarrow 带形

[18, 20] 上半圆 $\rightarrow 0 < u < \frac{5}{2}\pi$



$$\eta_1 = -\frac{z-1}{z+1}$$

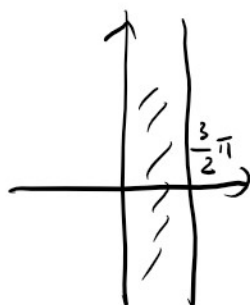


$$\eta_2 = \eta_1^2$$

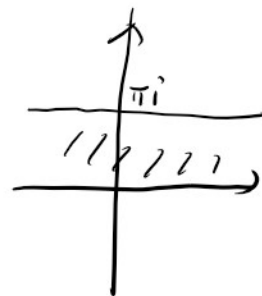


$$\eta_3 = h \eta_2 \downarrow$$

$$w = -\frac{5}{2}i \ln \left(\frac{z-1}{z+1} \right)^2$$



$$\eta_4 = (-i \eta_3) \times \frac{5}{2}$$



[19] 下半圆 $\rightarrow 0 < v < \frac{3}{2}\pi$

$$w = \frac{3}{2} \ln \left(\frac{z-1}{z+1} \right)^2$$

[21] 上半圆 $\rightarrow 0 < u < \frac{3}{2}\pi$

$$w = -\frac{3}{2}i \ln \left(\frac{z-1}{z+1} \right)^2$$