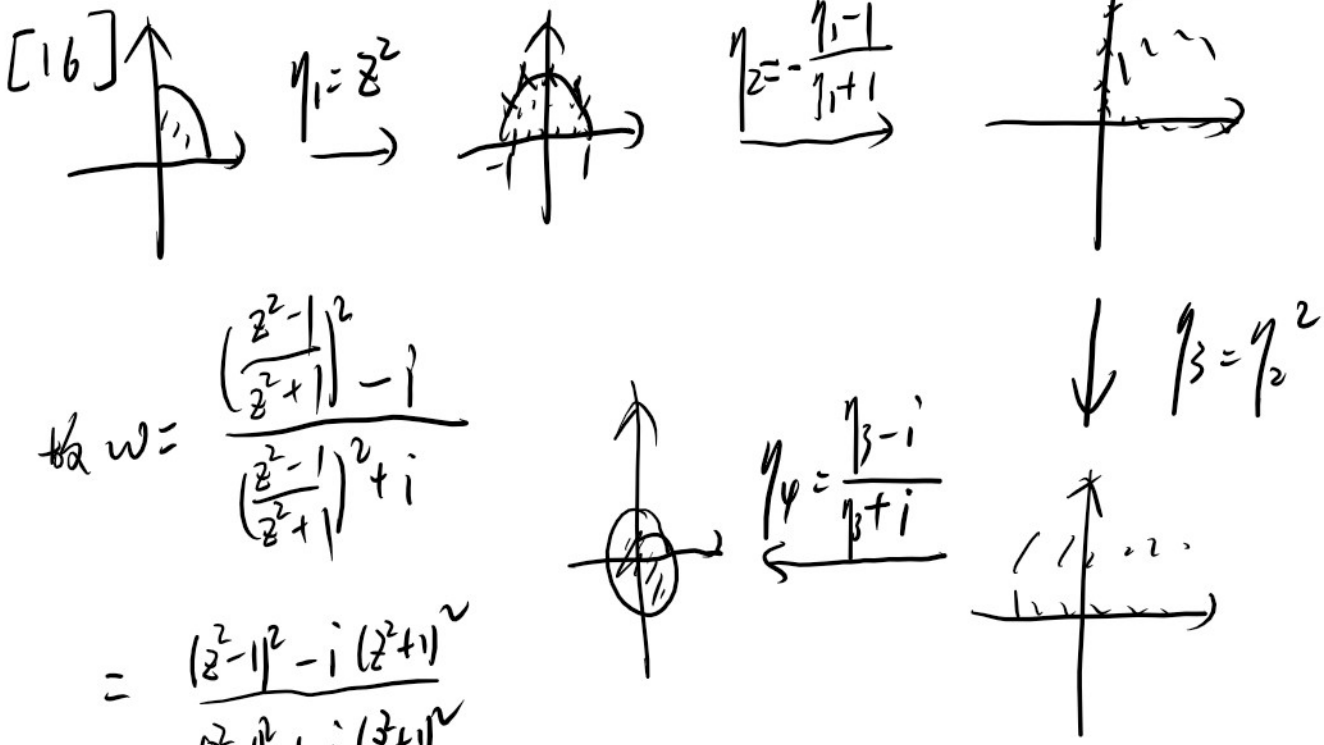
四、共形映射

$\frac{1}{4}$圆 → 单位圆

[16]

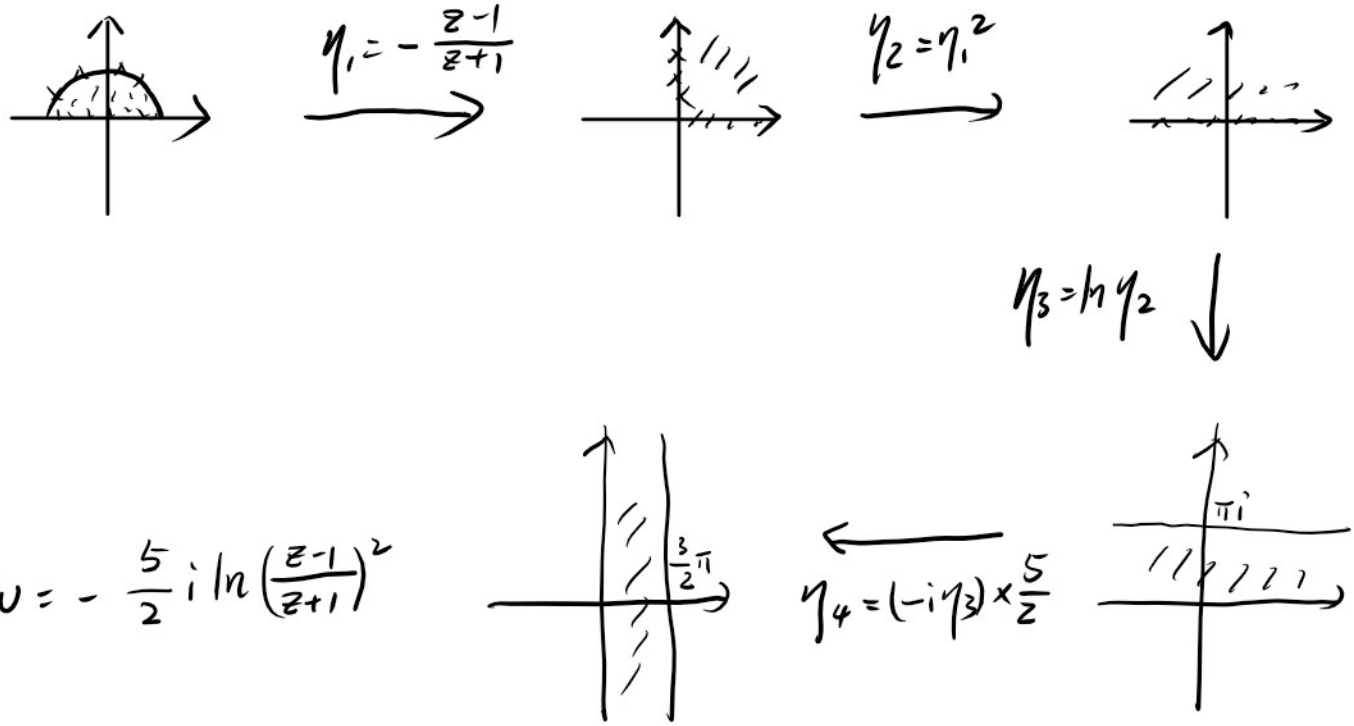


故 $w = \dfrac{\left(\dfrac{z^2-1}{z^2+1}\right)^2 - 1}{\left(\dfrac{z^2-1}{z^2+1}\right)^2 + i}$

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

半圓 → 帶形

[18, 20] 上半圓 → $0<u<\frac{5}{2}\pi$



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

[19] 下半圓 → $0<v<\frac{3}{2}\pi$ $\quad w=\frac{3}{2}\ln\left(\frac{z-1}{z+1}\right)^2$

[21] 上半圓 → $0<u<\frac{3}{2}\pi$ $\quad w=-\frac{3}{2}i\ln\left(\frac{z-1}{z+1}\right)^2$