

$$f(z) = z^2 \quad D = \{z \in \mathbb{C} : \operatorname{Im} z > 0\}$$

$$f(z) = w \quad z = f(w)$$

$$w = f(w)$$

$$f(w) = \sqrt{w} = |w|^{\frac{1}{2}} \left(\cos \frac{\theta}{2} + i \sin \frac{\theta}{2} \right) \quad \operatorname{Re} w > 0$$