

Definition VI

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$$\therefore (\pm \infty) \cdot i - 1 = 0$$

$$1+i = e^i \left(\because (1+i)^{\frac{1}{i}} = e \right)$$

$$i = \log(1+i) \left(\because 1+i = e^i \right)$$

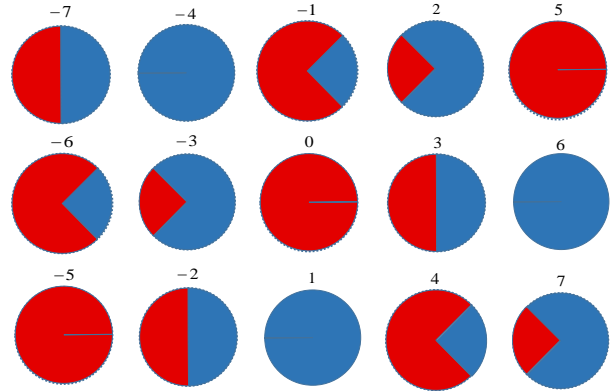
$$(1+i)^\pi = -1 \left(\because e^{i\pi} = -1 \right)$$

$$(1+i\pi)^{\frac{1}{i}} = e^\pi \left(\because (1+i\pi)^{\frac{1}{i}} = e^\pi \right)$$

$$i\pi = -2$$

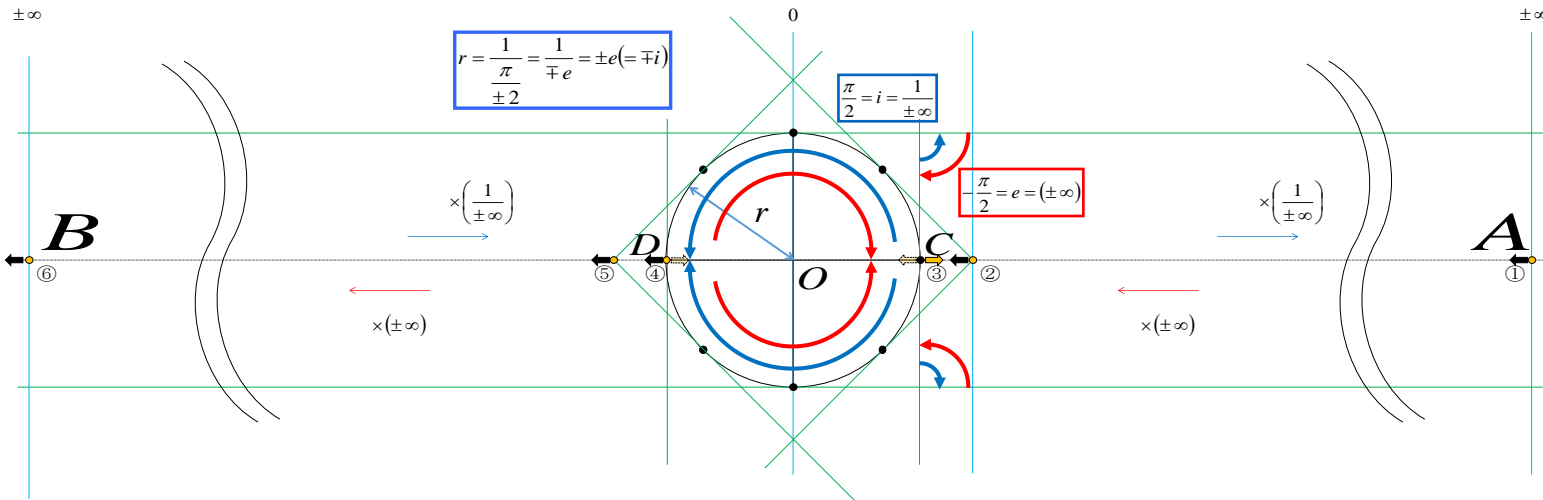
$$e = -i \left(\because e^{-2} = -1, \log i = \frac{1}{2}\pi i = -1 \right)$$

- ① $\log\left(-\frac{\pi}{2}\right) = \log e = 1$
 - ② $\log 1 = \log(-e^2) = 0$
 - ③ $\log 0 = \log\left(\frac{1}{\pm \infty}\right) = \log(e^{-1}) = \log(-e) = \log\left(\frac{\pi}{2}\right) = -1$
 - ④ $\log(-1) = i\pi = -2$
- $$\left. \begin{array}{l} \log(-1) = \log(e^{-2}) = -2 \log e = -2 \\ \text{① } \log(-2) = \log(\pm \infty) = \log e = 1 \end{array} \right\} -2 = \pm \infty$$



point A = point B (∵ OA = OB = e + 5n (∵ 5 = 0))

point C = point D (∵ r = ±∞ (= e))

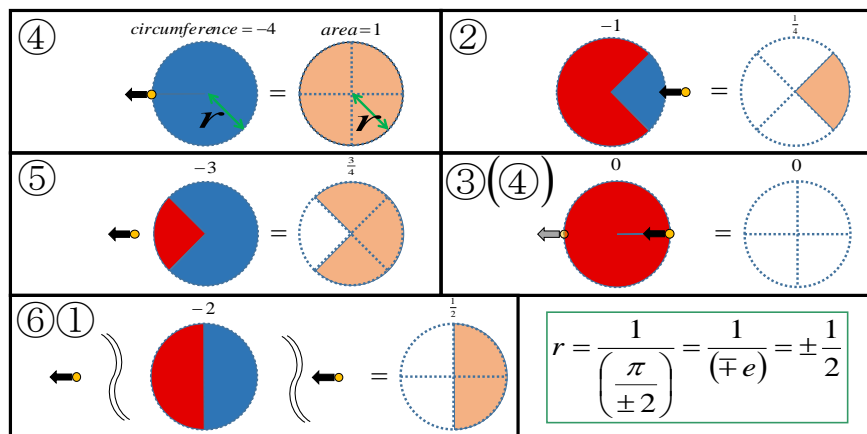


$$e = -2 (= \pm \infty) = -\frac{\pi}{2}$$

$$i = +2 \left(= \frac{1}{\pm \infty} \right) = \frac{\pi}{2}$$

$$\therefore 2 = \frac{1}{-2} \rightarrow 4 = -1$$

$$\left(\because e^2 = i^2 = -1 \right)$$



$$r = \frac{1}{\left(\frac{\pi}{\pm 2}\right)} = \frac{1}{(\mp e)} = \pm \frac{1}{2}$$