Definition Ⅶ

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

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

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

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

② $\log 1 = \log\left(-e^{2}\right) = 0$

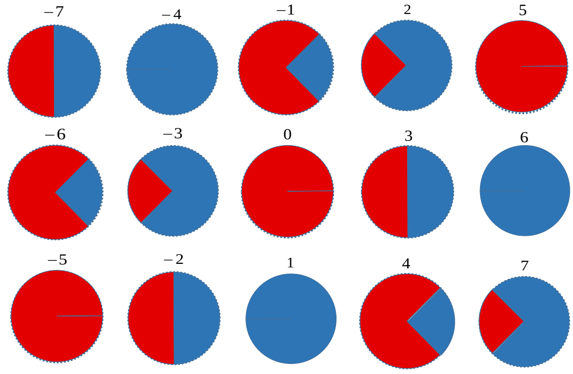
③ $\log 0 = \log\left(\frac{1}{\pm\infty}\right) = \log\left(e^{-1}\right) = \log(-e) = \log\left(\frac{\pi}{2}\right) = -1$

④ $\log(-1) = i\pi = -2$

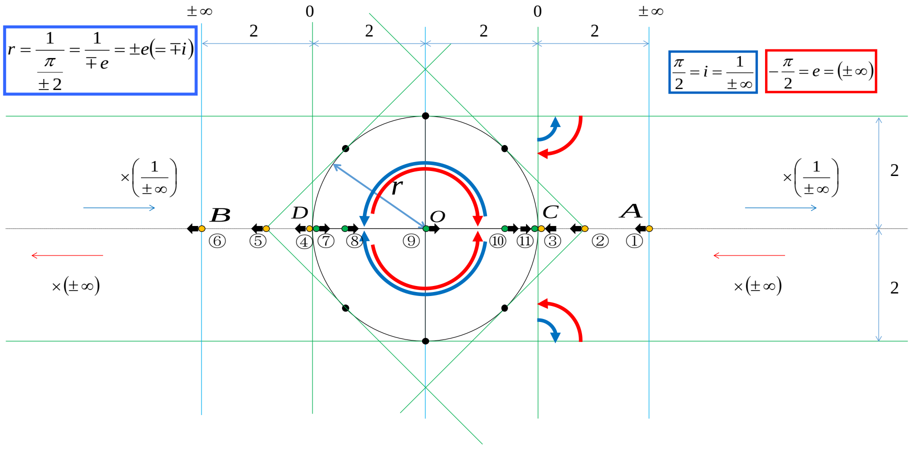
$\log(-1) = \log\left(e^{-2}\right) = -2\log e = -2$

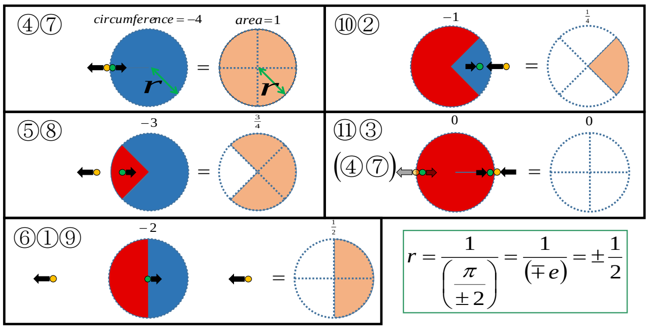
① $\log(-2) = \log(\pm\infty) = \log e = 1$

$-2 = \pm\infty$



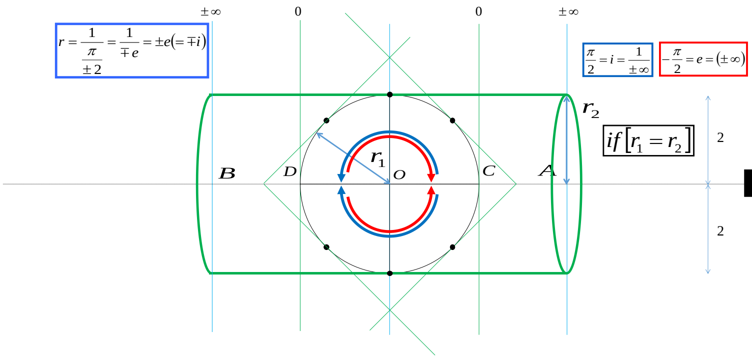
$if\,[OC = OD = e(\because r = e, point\,C = point\,D)]$ $if\,[AC = BD = e]$

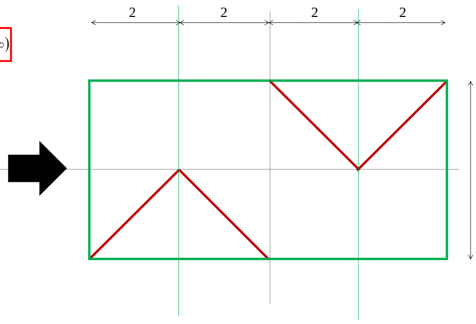




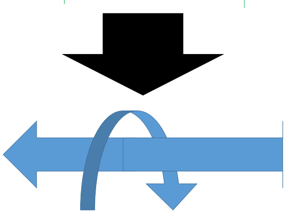
$$r = \frac{1}{\frac{\pi}{\pm 2}} = \frac{1}{(\mp e)} = \pm\frac{1}{2}$$

$if\,[OC = OD = e(\because r = e, point\,C = point\,D)]$ $if\,[AC = BD = e]$





$$2r_2\pi = 2e\pi = 2\times 2 = 4$$



$$e = -2(=\pm\infty) = -\frac{\pi}{2}$$
$$i = +2\left(=\frac{1}{\pm\infty}\right) = \frac{\pi}{2}$$
$$\therefore 2 = \frac{1}{-2} \to 4 = -1\left(\because e^{2} = i^{2} = -1\right)$$

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