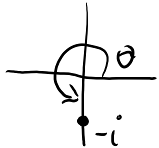
$$\sqrt[17]{-i}$$

$$\sqrt[n]{z} = \sqrt[n]{\rho e^{i\theta}}$$

$$-i = 1 \cdot e^{i\frac{3}{2}\pi}$$



$$\sqrt[17]{1 \cdot e^{i\,\overbrace{3/2\pi}}}$$

$$\shortparallel$$

$$e^{i\left(\frac{\frac{3}{2}\pi + 2k\pi}{17}\right)} \qquad k: 0, .., 16$$

$$\sqrt[n]{\rho e^{i\theta}} = \sqrt[n]{\rho} \cdot e^{i\left(\frac{\theta + 2k\pi}{n}\right)}$$

$n: 0, .., n-1$

$$e^{i\frac{3}{34}\pi}$$

$, \; . \; . \; - \; . \; .$

$$\left\{ e^{i\frac{\left(\frac{3}{2}\pi + 2k\pi\right)}{17}} \;\middle|\; k: 0, .., 16 \right\}$$

$$e^{z} = e^{3z-\bar{z}} \qquad z \in \mathbb{C} \qquad z = a+ib$$

$$a, b \in \mathbb{R}$$

$$e^{a+ib} = e^{3a+3ib-(a-ib)}$$

$$e^{a+ib} = e^{2a+4ib} \qquad \rho e^{i\vartheta}$$

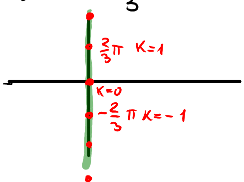
$$\underset{\mathbb{R}}{\underset{\Uparrow}{e^{a}}} \cdot e^{ib} \overset{\text{P.I}}{\Updownarrow} \underset{\mathbb{R}}{\underset{\Uparrow}{e^{2a}}} \cdot e^{4ib}$$

$$\begin{cases} e^{a} = e^{2a} \Rightarrow a = 2a \Rightarrow a = 0 \\ b = 4b + 2k\pi \quad k \in \mathbb{Z} \end{cases}$$

$$-3b = 2k\pi$$

$$b = +\frac{2}{3}k\pi \quad k \in \mathbb{Z}$$

$$z = 0 + \frac{2}{3}k\pi \quad k \in \mathbb{Z}$$



Ex

$$e^{2z-1} = e^{z-\bar{z}} \qquad z = a+ib$$

$$e^{2a+2bi-1} = e^{a+ib-(a-ib)}$$

$$e^{2a-1}\cdot e^{i(2b)} = e^{0}\cdot e^{i(2b)}$$

$\Updownarrow$ P.I.

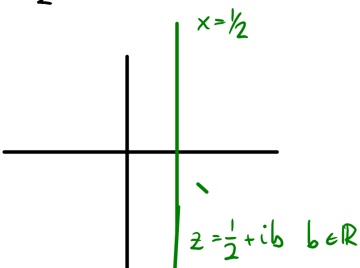
$$z = a+ib$$

$$\begin{cases} 2a-1 = 0 & \Rightarrow \quad a = 1/2 \\ 2\cancel{b} = 2\cancel{b} + 2k\pi \quad k\in\mathbb{Z} & \Rightarrow \quad 0 = 2k\pi \end{cases}$$

$k = 0$

$\forall b$

$$z = \frac{1}{2} + ib \qquad b\in\mathbb{R}$$



$(1/2, y) \quad y\in$

$$\frac{z^{12}-1}{z^4-1}=0$$

$z \in \mathbb{C}$ t.c. $z^{12}=1 \leftarrow$

$z^4 \neq 1 \leftarrow$

$$z^4+1=(z^2+1)(z^2-1)$$

$$(z+i)(z-i)$$

$$(z+1)(z-1)$$

Ex

$$e^{z\cdot\bar{z}} = 3 \qquad z = a+ib$$

$$e^{(a+ib)(a-ib)} = 3e^{i0}$$

$$e^{a^2+ib^2} = 3e^{i0}$$

$$e^{a^2}\cdot e^{ib^2} = 3e^{i0} \overset{P.I.}{\iff} \begin{cases} e^{a^2} = 3 \\ b^2 = 0 + 2k\pi \quad k\in\mathbb{Z} \end{cases} \Rightarrow \log_e a^2 = 3 \qquad 2\log_e a = 3$$

$$\log_e a = \frac{3}{2}$$

$$e^{\log_e a} = e^{\frac{3}{2}}$$

$$\boxed{a = e^{3/2}}$$

$$b = \pm\sqrt{2k\pi} \quad k\in\mathbb{N}$$

$$z = e^{\frac{3}{2}} \pm i\sqrt{2k\pi} \quad k\in\mathbb{N}$$

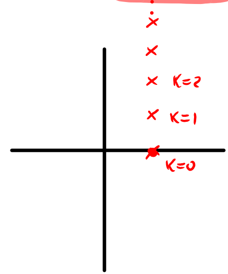
$k=0 \qquad z = e^{3/2}$

$k=1 \qquad z = e^{3/2} + i\sqrt{2\pi}$

$k=2 \qquad z = e^{3/2} + i\sqrt{4\pi}$

$k=3 \qquad z = e^{3/2} + i\sqrt{6\pi}$

$\vdots$



TROVARE $A, +, \cdot$ CAMPO FINITO

$\mathbb{Z}, \oplus, \odot$ $\{0,1,2,3,4\} = A = \mathbb{Z}_5$

$\mathbb{Z}_p$ p PRIMO SONO CAMPI

$\oplus : A \times A \longrightarrow A$

$(a, b) \rightsquigarrow$ RESTO DI $a+b$ DIV 5

$\odot : A \times A \longrightarrow A$

$(a, b) \rightsquigarrow$ RESTO DI $a \cdot b$ DIV 5

$3 \oplus 3 = 1$ $2 \oplus 3 = 0$ $1 \oplus 1 = 2$

$3 \odot 4 = 2$ 0 È NEUTRO ADD.

1 È NEUTRO MOLT

$\cancel{0}$

$1 \odot 1 = 1$
$2 \odot 3 = 1$
$3 \odot 2 = 1$
$4 \odot 4 = 1$

+	0	1	2	3	4
0	0	1	2	3	4
1	1	2	3	4	
2	2	3	4		
3	3	4			
4	4				

$\mathbb{Z}_3$

+	0	1	2
0	0	1	2
1	1	2	·
2	2	·	·

Ex

$$\overbrace{z^7+2iz^6+iz^5}+\overbrace{2z^2+4iz+2i}=0$$

$$(z^5+2)(z^2+2iz+i)=0$$

$$z^5=-2$$

$$\sqrt[5]{2e^{i\pi}}$$

$$=$$

$$\sqrt[5]{2}\,e^{i\left(\frac{\pi+2k\pi}{5}\right)}$$

$k: 0, \ldots, 4$

$\pm 1, \pm 2, \pm 3, \pm 4, \pm 6$
± 12

FATT. IN $\mathbb{Q}, \mathbb{R}, \mathbb{C}$

$$P(x) = x^6 - 5x^5 + 8x^4 - x^3 - 15x^2 + 24x - 12$$

$$P(1) = 1 - \cancel{5} + 8 - \cancel{1} - \cancel{15} + 24 - \cancel{12} = 0$$

$$\Rightarrow (x-1) \mid P(x)$$

$$P(x) = (x-1)(x-2)^2(x^3+3)$$

$x = -\sqrt[3]{3}$
ROOT

$$P(x) = (x-1)(x-\sqrt{2})(x+\sqrt{2})(x^3+3)$$

IRR?

$\parallel$

$$(x + \sqrt[3]{3})(\dots)$$

$$x^3 + 3 \;\big|\; x + \sqrt[3]{3}$$

$\dots\dots$