

Exercice 5 bis :

1°) z_1 et z_2 ont comme formes
trigonométriques respectives

$$[2 ; 11\pi/3] \text{ et } [\sqrt{2} ; 3\pi/4].$$

Déterminez leurs formes algébriques.

2°) z_3 et z_4 ont comme formes
algébriques respectives

$$- \sqrt{2} - i \sqrt{2} \text{ et } \sqrt{6} + i \sqrt{2}$$

Déterminez leurs formes

trigonométriques.

Exercice 5 bis : 1°)

z_1 de forme trigonométrique $z_1 = [2 ; 11\pi/3]$

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$$a = r \cos \beta = 2 (\cos 11\pi/3)$$

$$b = r \sin \beta = 2 (\sin 11\pi/3)$$

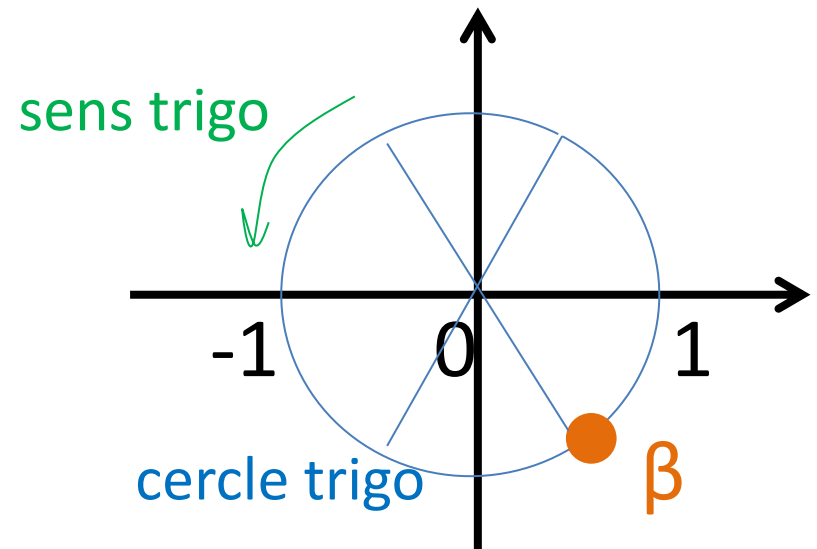
Exercice 5 bis : 1°)

z_1 de forme trigonométrique $z_1 = [2 ; \frac{11\pi}{3}]$

$$a = r \cos \beta = 2 \left(\cos \frac{11\pi}{3} \right)$$

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$$\begin{aligned} \frac{11\pi}{3} &= 0 + 4\pi - \frac{\pi}{3} \\ &= 0 + 2(2\pi) - \frac{\pi}{3} \end{aligned}$$



donc à partir de 0 j'avance de 2 tours et je recule du tiers d'un demi-tour

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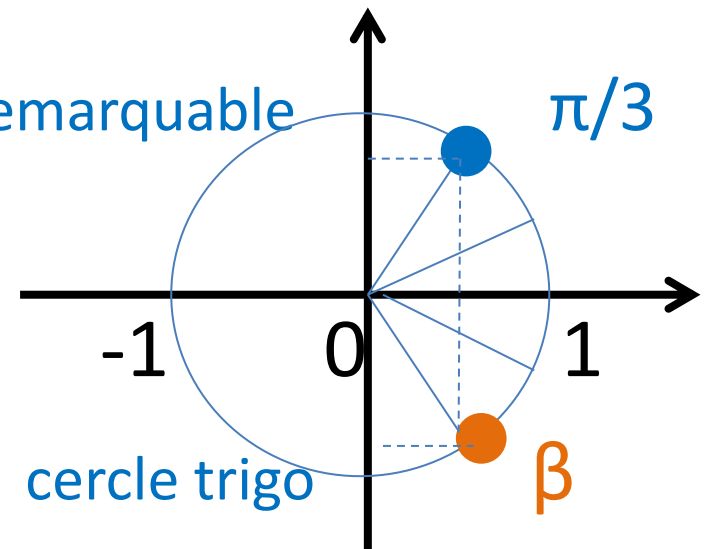
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angle remarquable



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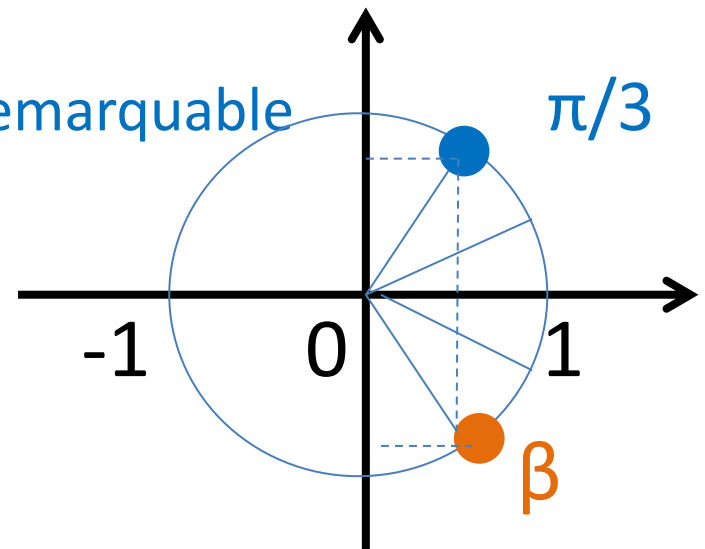
$$a = r \cos \beta = 2 \left(\cos \frac{11\pi}{3} \right)$$

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$$\frac{11\pi}{3} = 0 + 4\pi - \frac{\pi}{3}$$

$$\begin{aligned} \cos \frac{11\pi}{3} &= \cos \frac{\pi}{3} = \frac{1}{2} \\ \sin \frac{11\pi}{3} &= -\sin \frac{\pi}{3} = -\frac{\sqrt{3}}{2} \end{aligned}$$

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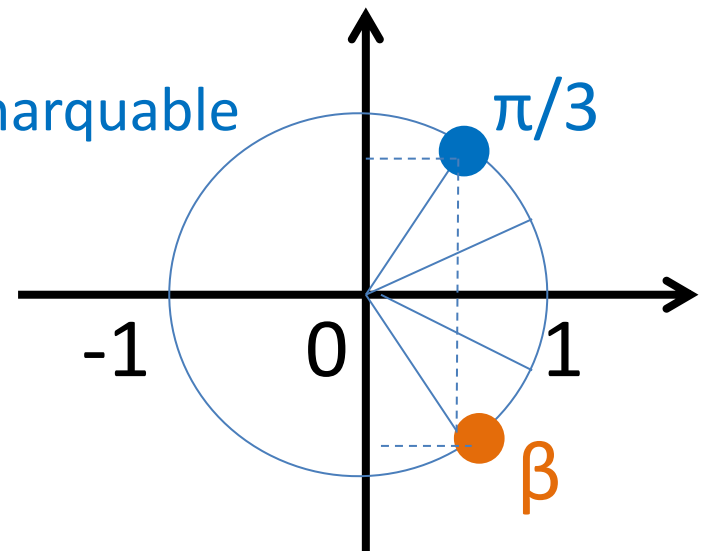
$$\frac{11\pi}{3} = 0 + 4\pi - \frac{\pi}{3}$$

$$\cos \frac{11\pi}{3} = \cos \frac{\pi}{3} = \frac{1}{2}$$

$$\sin \frac{11\pi}{3} = -\sin \frac{\pi}{3} = -\frac{\sqrt{3}}{2}$$

$$a = 2 \left(\frac{1}{2} \right) = 1$$

$$b = 2 \left(-\frac{\sqrt{3}}{2} \right) = -\sqrt{3}$$



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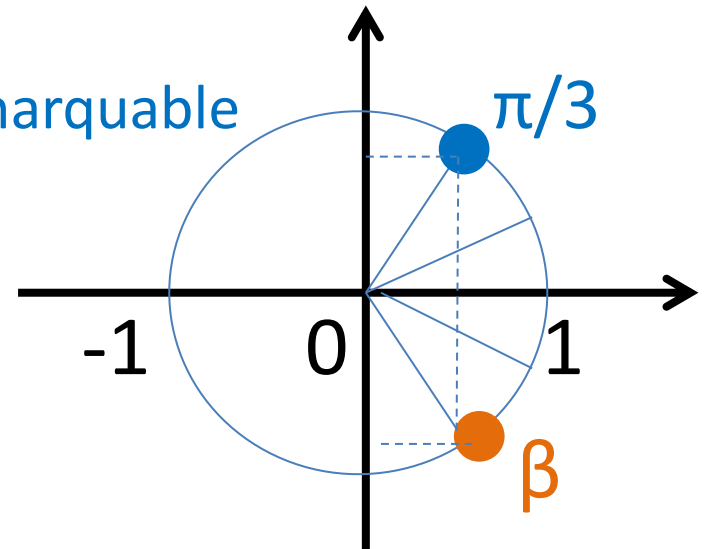
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forme algébrique

$$\Rightarrow z_1 = 1 - i\sqrt{3}$$

$$\frac{3\pi}{4}$$

$$\frac{\pi}{4}$$

$$\frac{\pi}{4}$$

$$\frac{\sqrt{2}}{2\sqrt{2}}$$

	signes de f'(x)	sujets
B < A	+ 0 -	de 3 à 20
A < B	- 0 +	de 21 à 40
A < B	+ 0 -	de 41 à 78

Exercice 5 bis : 1°)

z_2 de forme trigonométrique $z_2 = [\sqrt{2} ; \frac{3\pi}{4}]$

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$$a = r \cos \beta = \sqrt{2} \left(\cos \frac{3\pi}{4} \right)$$

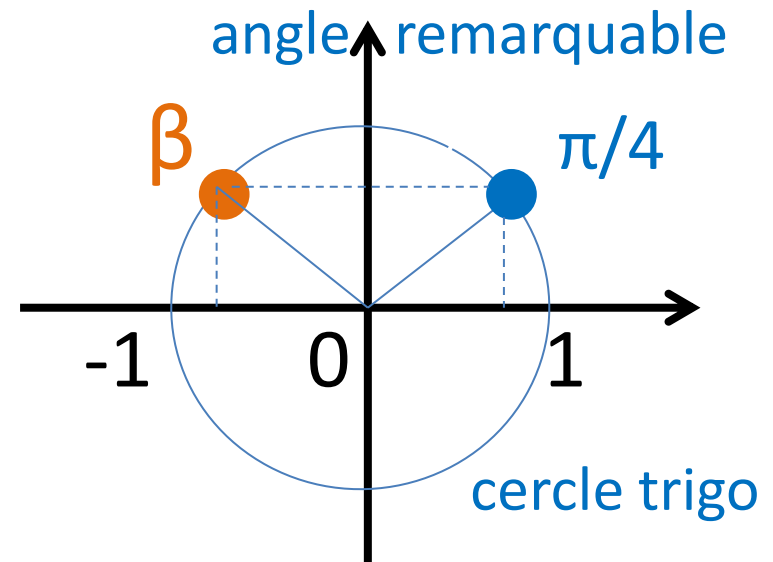
$$b = r \sin \beta = \sqrt{2} \left(\sin \frac{3\pi}{4} \right)$$

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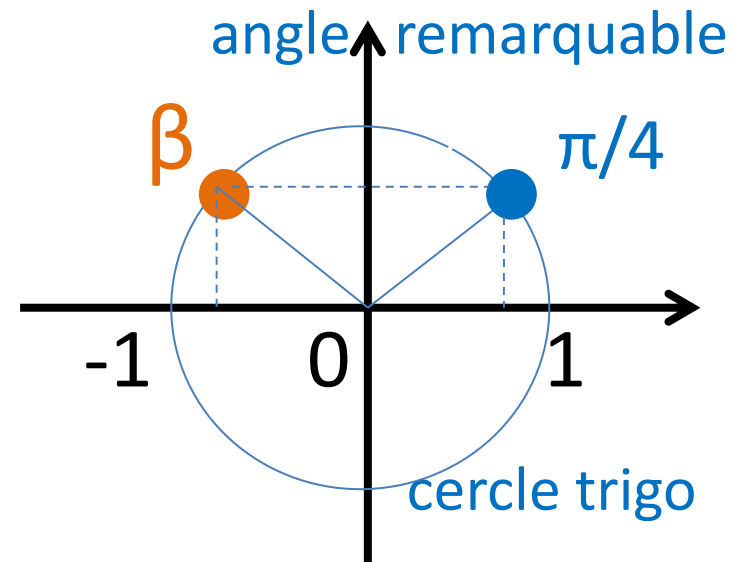
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$$a = \sqrt{2} \left(-\frac{\sqrt{2}}{2} \right) = -1$$

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Exercice 5 bis : 1°)

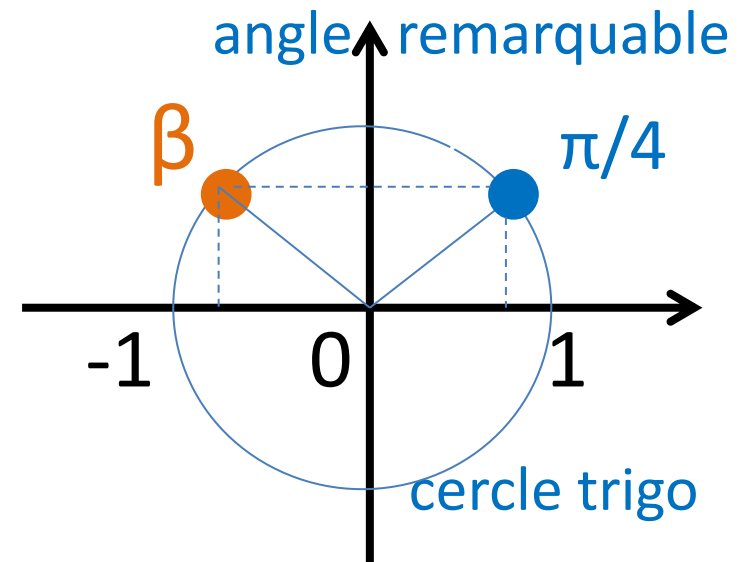
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$$z_2 = -1 + i$$

forme algébrique

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$$r = |z|$$

$$r = \sqrt{a^2 + b^2} = \sqrt{(-\sqrt{2})^2 + (-\sqrt{2})^2} = \sqrt{4} = 2$$

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$$\beta = \arg(z)$$

$$\begin{cases} \cos \beta = \frac{a}{r} = -\frac{\sqrt{2}}{2} \\ \sin \beta = \frac{b}{r} = -\frac{\sqrt{2}}{2} \end{cases}$$

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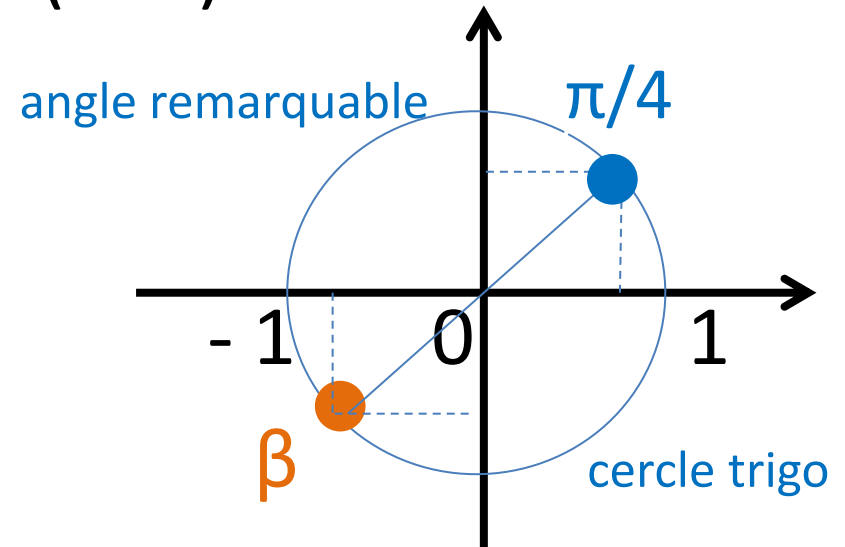
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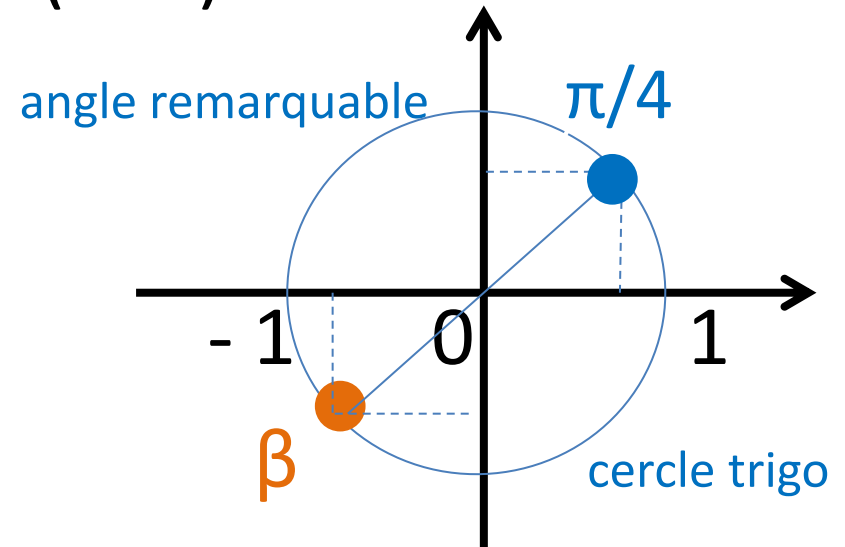
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$$\text{donc } \beta = 5\pi/4 + k2\pi$$

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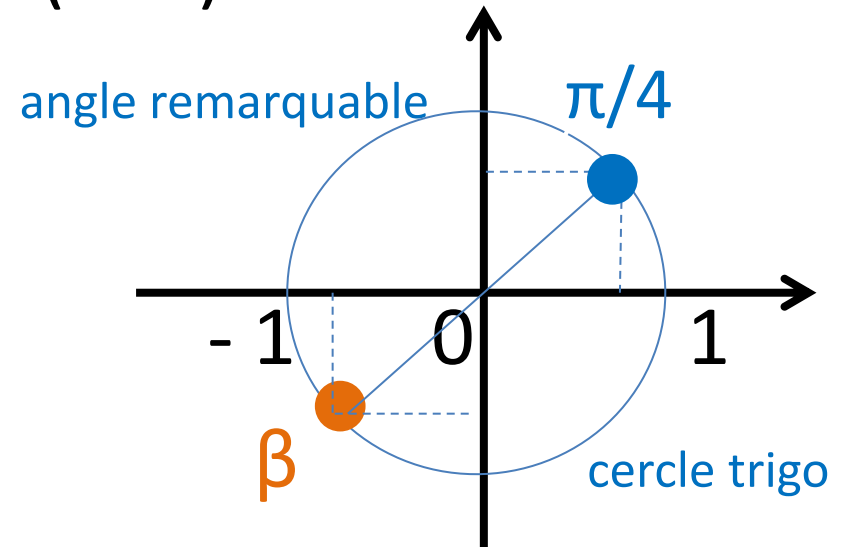
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$$z_3 = [2 ; 5\pi/4]$$

forme trigonométrique

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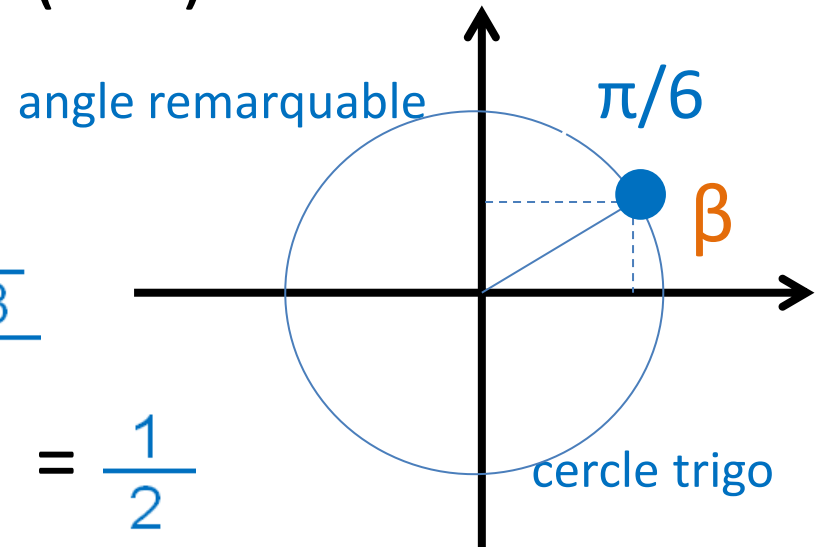
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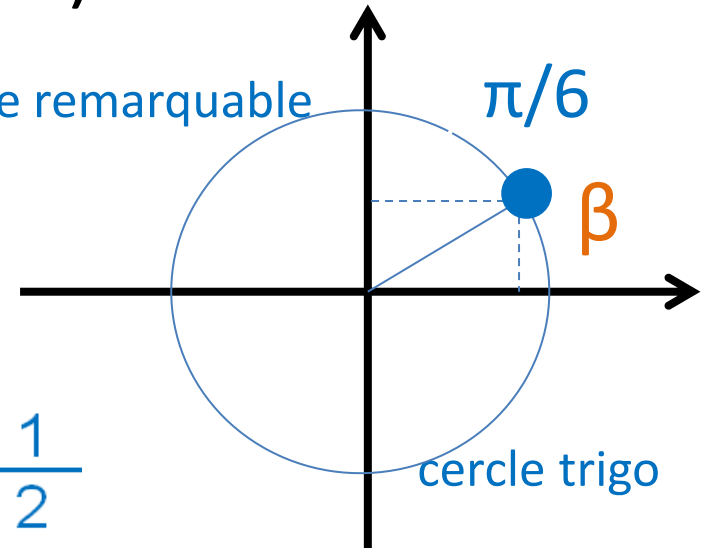
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angle remarquable



$$\text{donc } \beta = \pi/6 + k2\pi$$

$$Z_4 = \sqrt{6} + i \sqrt{2}$$

forme algébrique

$$Z_4 = [2\sqrt{2} ; \pi/6]$$

forme trigonométrique