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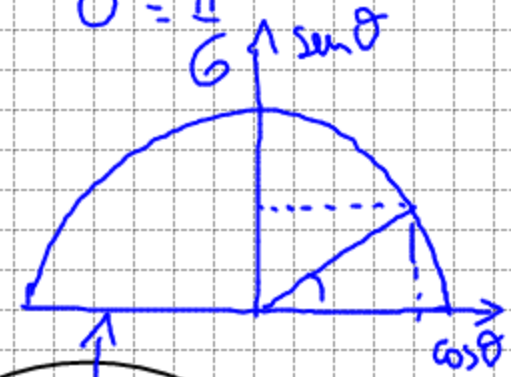
$$(\sqrt{3}+i)^5$$

$$(a+ib)^5 = \rho^5(\cos\vartheta + i\,\mathrm{sen}\,\vartheta)^5 = \rho^5(\cos 5\vartheta + i\,\mathrm{sen}\,5\vartheta)$$

$$a = \sqrt{3} \qquad b = 1 \qquad \rho = \sqrt{a^2+b^2} = \sqrt{4} = 2$$

$$\begin{cases} \cos\vartheta = \dfrac{a}{\rho} = \dfrac{\sqrt{3}}{2} \\ \mathrm{sen}\,\vartheta = \dfrac{b}{\rho} = \dfrac{1}{2} \end{cases} \qquad \vartheta = \frac{\pi}{6}$$

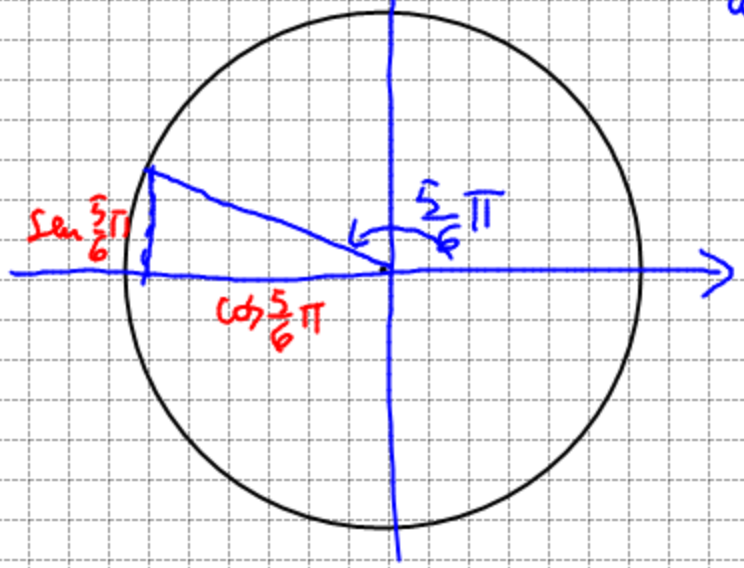


$$(\sqrt{3}+i)^5 = 2^5\left(\cos\frac{5}{6}\pi + i\,\mathrm{sen}\,\frac{5}{6}\pi\right) =$$

$$= 32\left(-\frac{\sqrt{3}}{2} + i\,\frac{1}{2}\right) =$$

$$= -16\sqrt{3} + 16i =$$

$$= -16(\sqrt{3} - i)$$



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$z_1 = \frac{2}{3} - \frac{1}{7}i \qquad z_2 = \frac{3}{4} + i$

$$\frac{z_1}{z_2} = \frac{\frac{2}{3} - \frac{1}{7}i}{\frac{3}{4} + i} = \frac{\frac{2}{3} - \frac{1}{7}i}{\frac{3}{4} + i} \cdot \frac{\frac{3}{4} - i}{\frac{3}{4} - i} = \frac{\frac{1}{2} - \frac{1}{7} - i\left(\frac{2}{3} + \frac{3}{28}\right)}{\frac{9}{16} + 1} =$$

$$= \frac{\frac{5}{14} - i\frac{65}{84}}{\frac{25}{16}} = \frac{16}{25}\left[\frac{5}{14} - i\frac{65}{84}\right] = \frac{8}{35} - i\frac{52}{105}$$

$$z_1 \cdot z_2 = \left(\frac{2}{3} - \frac{1}{7}i\right)\left(\frac{3}{4} + i\right) = \frac{1}{2} + \frac{2}{3}i - \frac{3}{28}i - \frac{1}{7}i^2 = \left(\frac{1}{2} + \frac{1}{7}\right) + i\left(\frac{2}{3} - \frac{3}{28}\right)$$

$$= \frac{9}{14} + i\frac{47}{84}$$

$\overline{z_1 \cdot z_2} \neq z_1 \cdot \overline{z_2}$

$$\frac{z_1}{z_2} = \frac{z_1 \cdot \overline{z_2}}{z_2 \cdot \overline{z_2}}$$

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$x^2 + 4y^2 = 4$

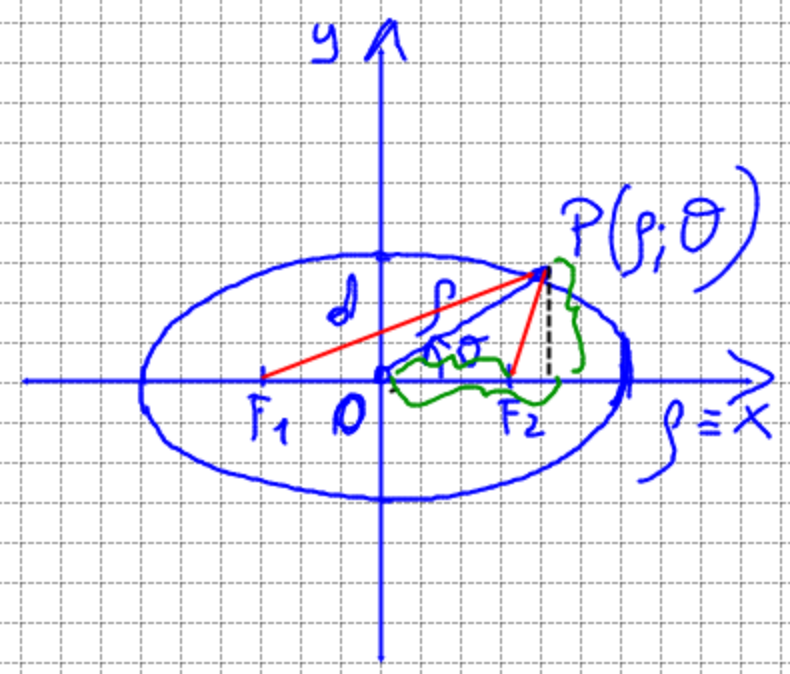
$\frac{x^2}{4} + \frac{y^2}{1} = 1$

$c^2 = a^2 - b^2$

$c^2 = 3$

$F_1(-\sqrt{3}; 0)$

$F_2(\sqrt{3}; 0)$



$\overline{PF_1} + \overline{PF_2} = \text{cost} = 2a$

$\overline{F_1F_2} = 2\sqrt{3} \qquad \overline{PF_1} = d$