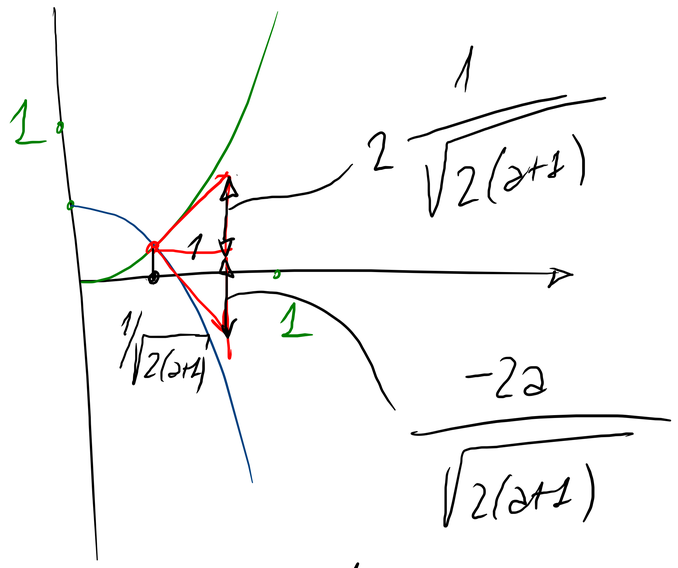
$x>0$

$y = x^2 \qquad y' = 2x$

$y = \frac{1}{2} - 2x^2 \qquad y' = -2x$



$x^2 = \frac{1}{2} - 2x^2 \iff (a+1)x^2 = \frac{1}{2} \iff x^2 = \frac{1}{2(a+1)}$

$\begin{pmatrix} 1 \\ \frac{2}{\sqrt{2(a+1)}} \end{pmatrix} \perp \begin{pmatrix} 1 \\ \frac{-2a}{\sqrt{2(a+1)}} \end{pmatrix}$

$\Rightarrow x = \frac{1}{\sqrt{2(a+1)}}$ si $x>0$

$1 \cdot 1 + \frac{2}{\sqrt{2(a+1)}} \cdot \frac{-2a}{\sqrt{2(a+1)}} = 0$

$1 = \frac{4a}{2(a+1)} \iff 2a+2 = 4a$

$\iff 2a = 2 \iff \boxed{a = 1}$

$-24-10i$ 2,6 comms $i = 0+1i$ $a=0$ $b=1$

$$(x+yi)^2 = a+bi \qquad w^2 = z \Rightarrow |w^2| = |z|$$

① $$|w^2| = |w|^2 = \left(\sqrt{x^2+y^2}\right)^2 = x^2+y^2 = |z| = \sqrt{a^2+b^2}$$

$$\Rightarrow \boxed{x^2+y^2 = \sqrt{a^2+b^2}}$$

$y^i \cdot y^i = y^{2} \cdot i^2$

$$\begin{cases} x^2+y^2 = 1 \\ x^2-y^2 = 0 \\ 2xy = 1 \end{cases}$$

② $$x^2 + 2xyi + (yi)^2 = x^2 - y^2 + 2xyi = 2+6i$$

$$\boxed{x^2-y^2 = 2}$$

$$\boxed{2xy = 6}$$

$x = \pm \frac{\sqrt{2}}{2}$

$2x^2 = 1 \quad x^2 = \frac{1}{2} \quad x = \pm\sqrt{\frac{1}{2}}$

$$\Rightarrow y = \frac{1}{2x} = \pm \frac{1}{2\sqrt{\frac{1}{2}}}$$

$$y = \pm \frac{\sqrt{2}}{2}$$

$$3z^3+2z^2+7z-20 \stackrel{?}{=} (z-u)\,Q(z)$$

$u = 2i-1$ (A vérifier) $\quad 3u^3+2u^2+7u-1=0$

$-12-8i+1$

	3	2	7	-20
		$6i-3$	$-11-8i$	20
$2i-1$				
	3	$6i-1$	$-4-8i$	0

$(2i-1)(-4-8i)$

$-8i+16+4+8i$

$$(z+1-2i)(3z^2+(6i-1)z-4(1+2i))$$

	3	$6i-1$	$-4(1+2i)$
		$-3-6i$	$4(1+2i)$
$-(1+2i)$			
	3	-4	0

$$(3z-4)(z-(-1+2i))(z-(-1-2i)) =$$

$$(3z-4)(z^2+(1+2i)z+(1-2i)z+(-1+2i)(-1-2i))$$

$$(3z-4)(z^2+2z+5)$$

$$3x^3 + 2x^2 + 7x - 20 = (3x - 4)(x^2 + 2x + 5)$$

$$[2^5; \pi]$$

$$[2; \frac{\pi}{5}]$$

$$5\theta = \pi + k \cdot 2\pi$$

$$\theta = \frac{\pi}{5} + k \cdot \frac{2\pi}{5} \qquad k \in \mathbb{Z}_5 \qquad k = 0,1,2,3,4$$

$$az^2 + bz + c = 0$$

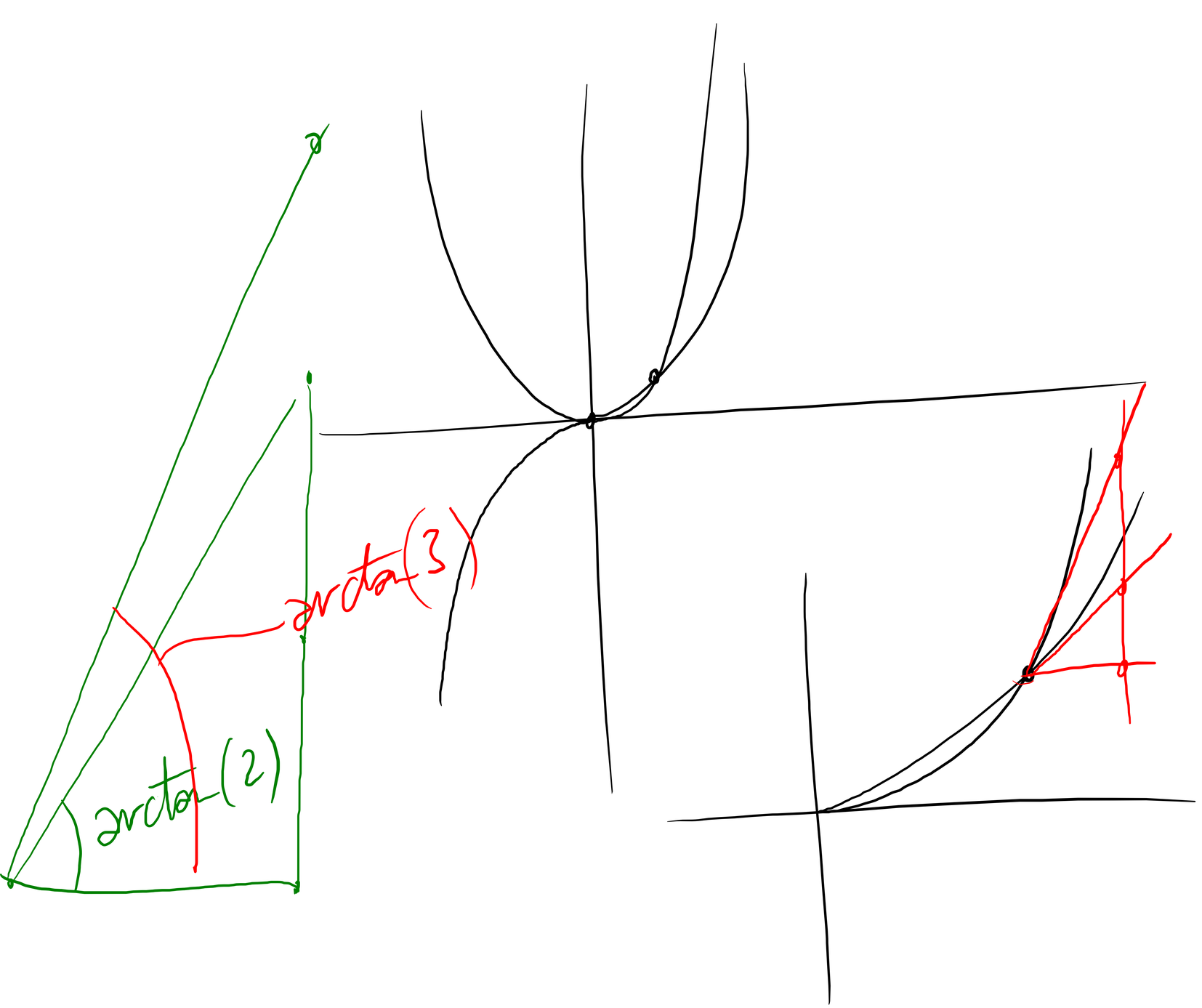
$$a, b, c \in \mathbb{C}$$

$$z \in \mathbb{C}$$

$$\Delta = b^2 - 4ac$$

$$z_1 = \frac{-b + \sqrt{\Delta}}{2a}$$

$$z_2 = \frac{-b - \sqrt{\Delta}}{2a}$$



$$x^2 = x^3$$

$$x^2(x-1)=0$$

$$x=0$$

$$x=1$$

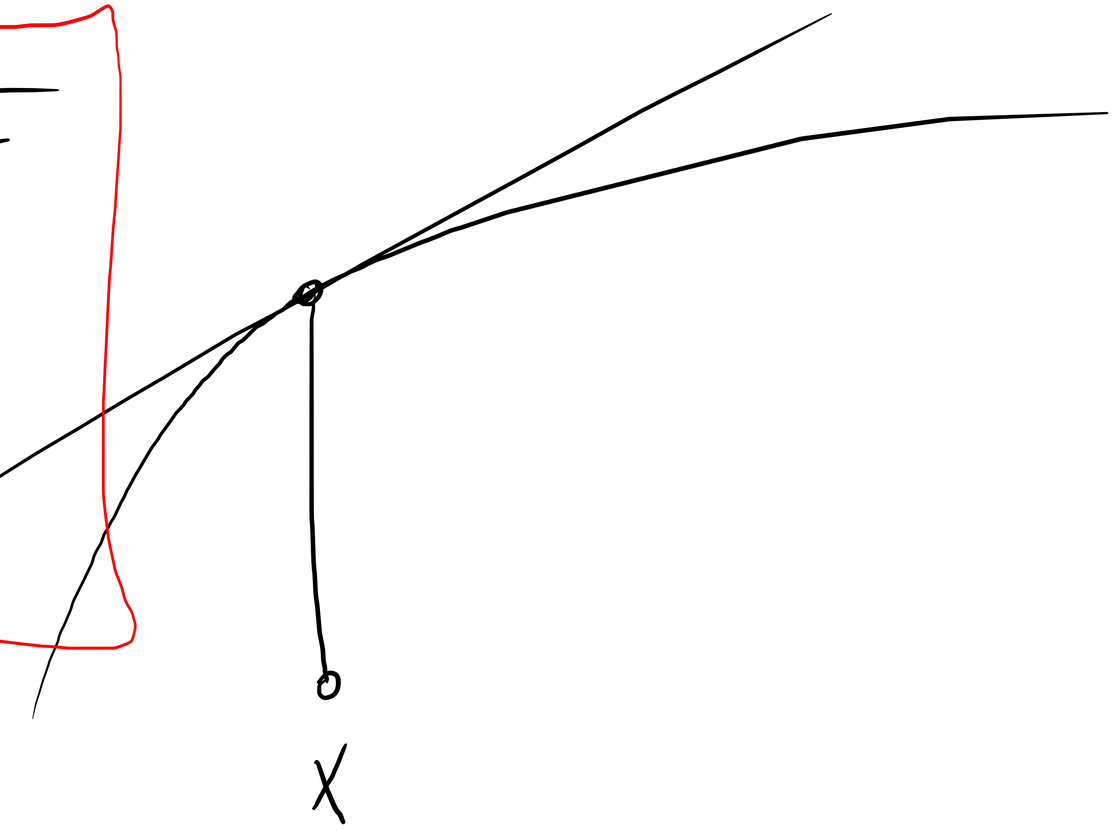
En $x=0$ $\alpha=0°$

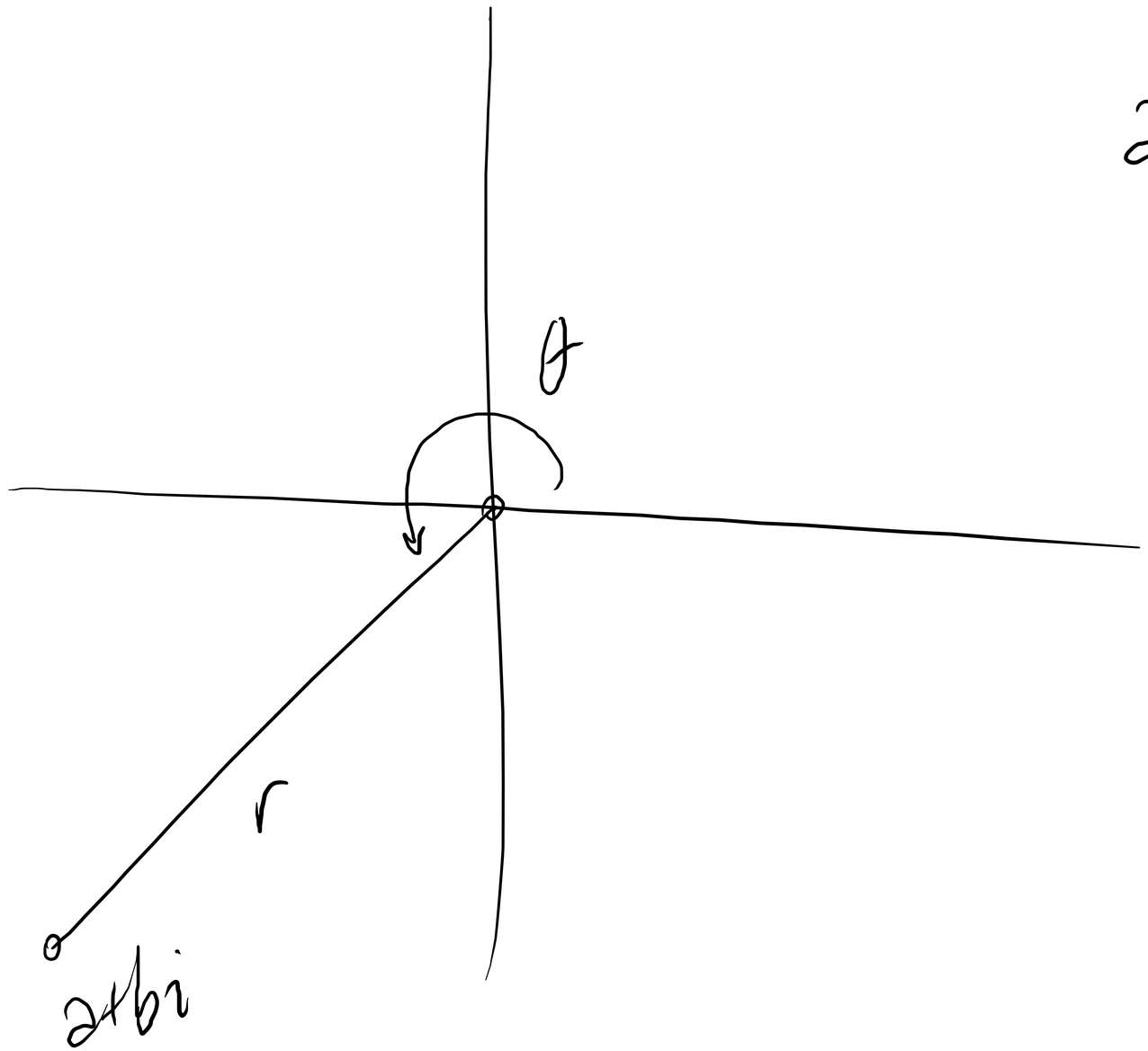
$$y = \sqrt{x} + k$$

$$y' = \frac{1}{2\sqrt{x}}$$

$$y = \frac{x}{2} + 3$$

$$y' = \frac{1}{2}$$





$$a+bi = r\cos\theta + r\sin\theta \cdot i$$

$$[r;\theta]^4 = 1+i$$

THM

$$[r^4;4\theta] = 1+i = \left[\sqrt{2};\frac{\pi}{4}\right]$$

$$\begin{cases} r^4 = \sqrt{2} \\ 4\theta = \frac{\pi}{4} + k\cdot 2\pi \end{cases} \qquad k \in \mathbb{Z}_4$$

$$\theta = \frac{\pi}{16} + k\,\frac{2\pi}{4}$$

$k=0$ $\quad \sqrt[4]{\sqrt{2}}\cdot\left(\cos\frac{\pi}{16} + \sin\frac{\pi}{16}\cdot i\right)$

$k=1$ $\quad \sqrt[8]{2}\left(\cos\frac{9\pi}{16} + \sin\frac{9\pi}{16}\cdot i\right)$

$k=2$

$k=3$

$k=1 \quad 4\theta = \frac{\pi}{4} + 2\pi$

$$4\theta = \frac{\pi}{4} + \frac{8\pi}{4} = \frac{9\pi}{4} \Rightarrow \theta = \frac{9\pi}{4\cdot 4} = \frac{9\pi}{16}$$