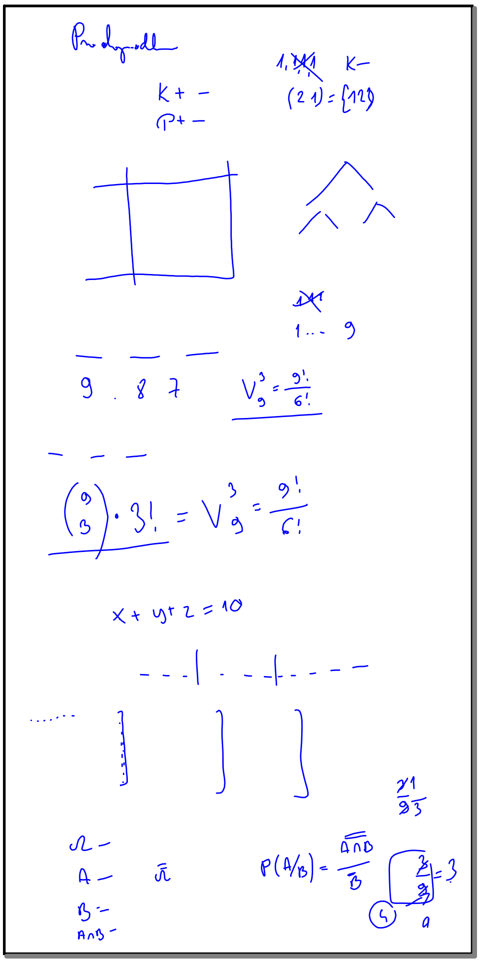
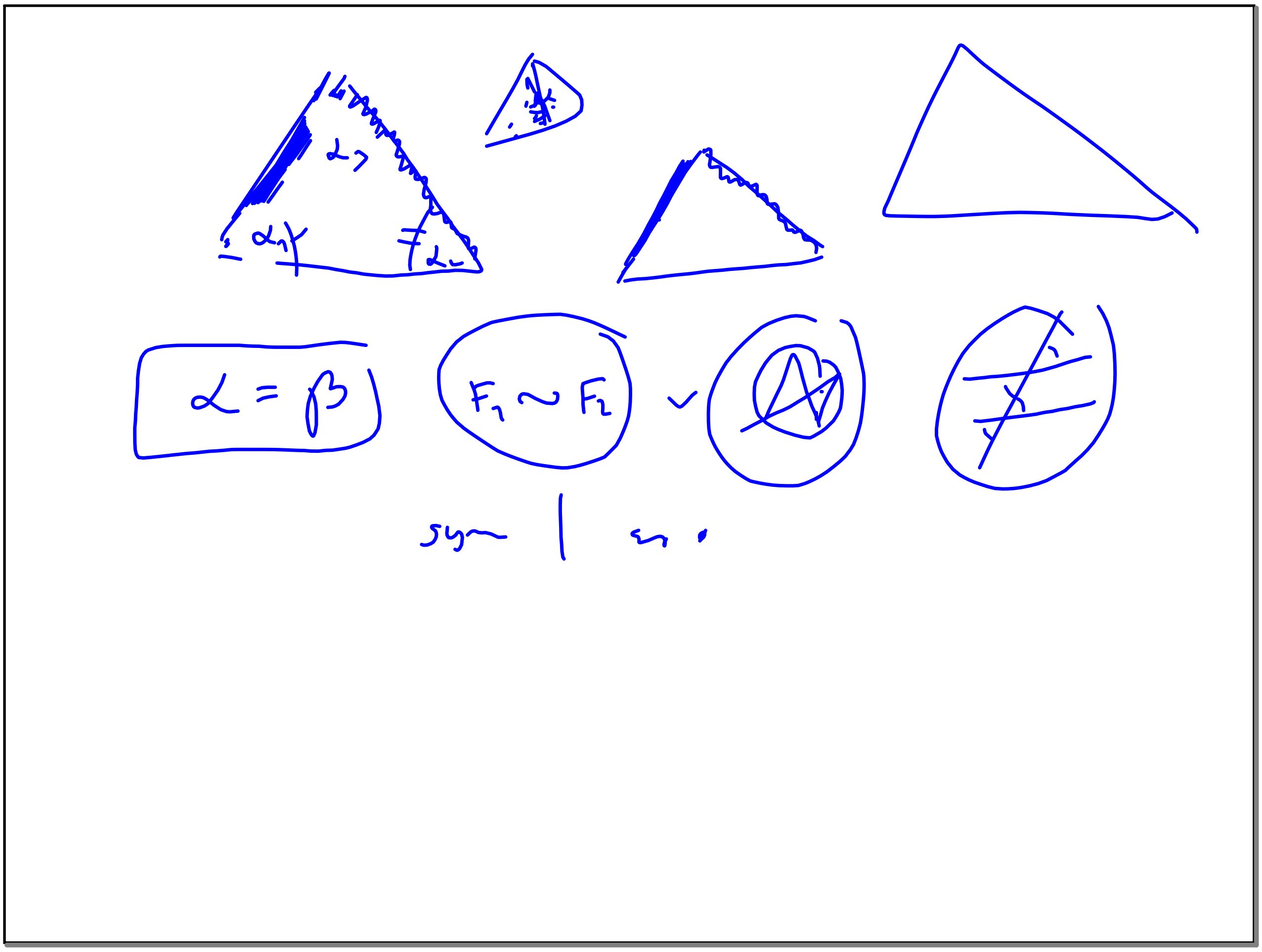
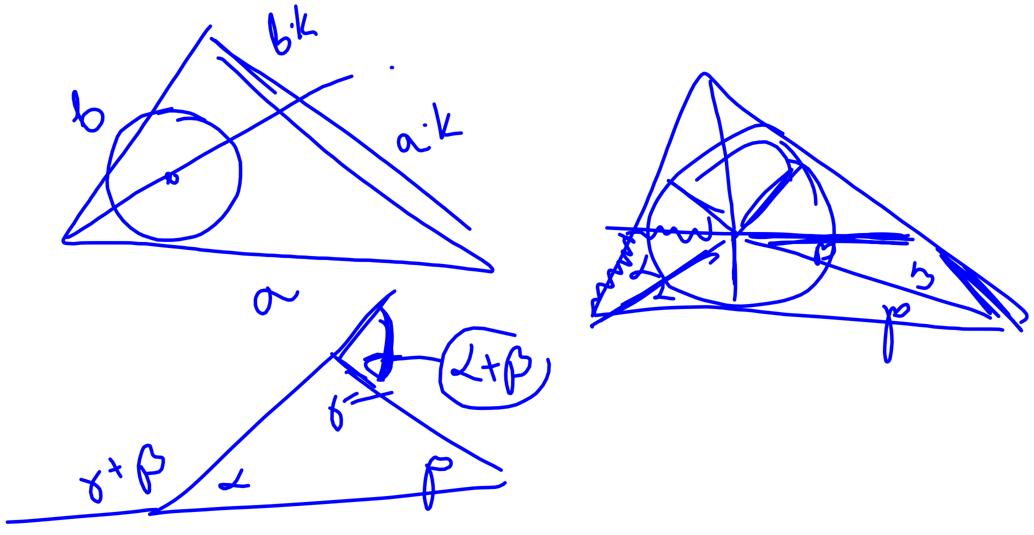
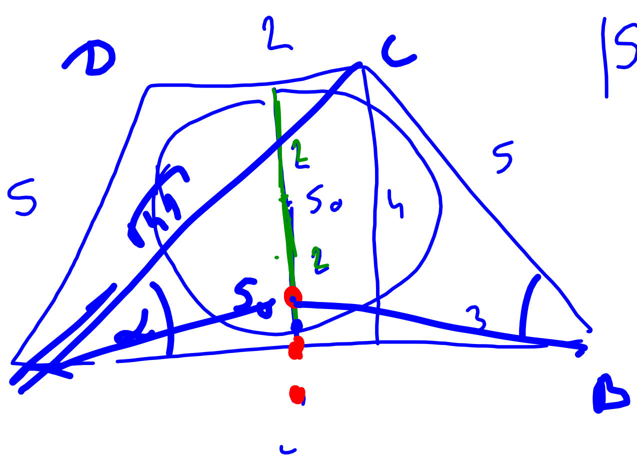

Przykład
K + –
P + –
(2 1) = {1 2}
1 ... 9
9 . 8 7
V_9^3 = 9!/6!
(9 3) · 3! = V_9^3 = 9!/6!
x + y + z = 10
P(A/B) =


α = β
F1 ~ F2





$|S_u S_o|$

$R = \frac{a}{2\sin\alpha}$

$R = \frac{\sqrt{41}}{8} \cdot 5$

$\approx 4{,}001$

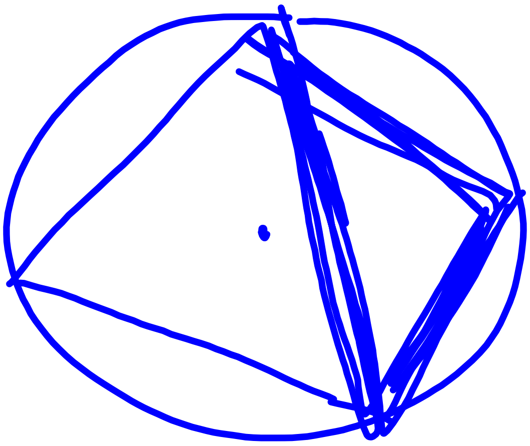
$\boxed{41 + 25 > 64}$ 66

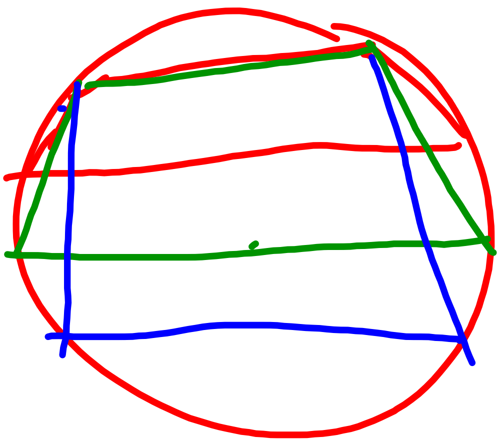
$a^2 + b^2 = c^2$

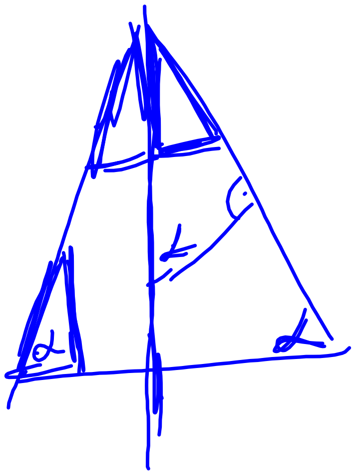
$<$

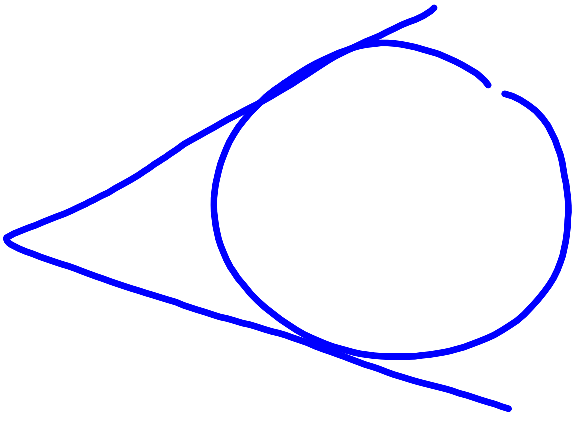
$1^2 + 1^2 > 1^2$

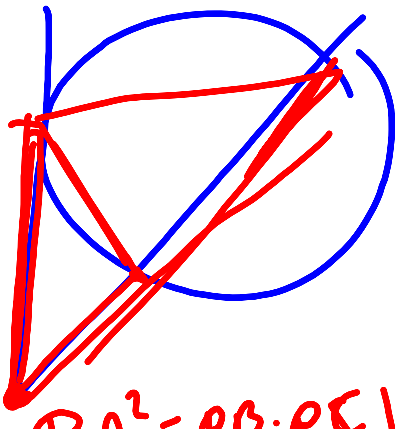
$a^2 + b^2 > c^2$





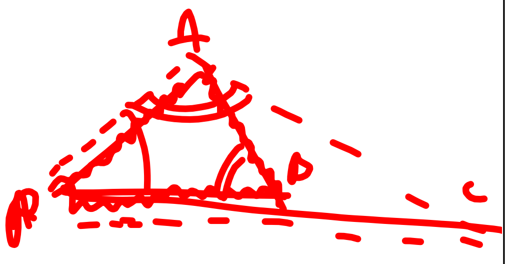


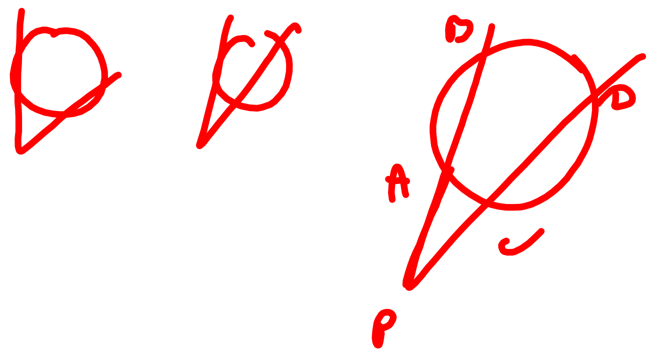




$$PA^2 = PB \cdot PC$$

$$\frac{PA}{PB} = \frac{PC}{PA}$$

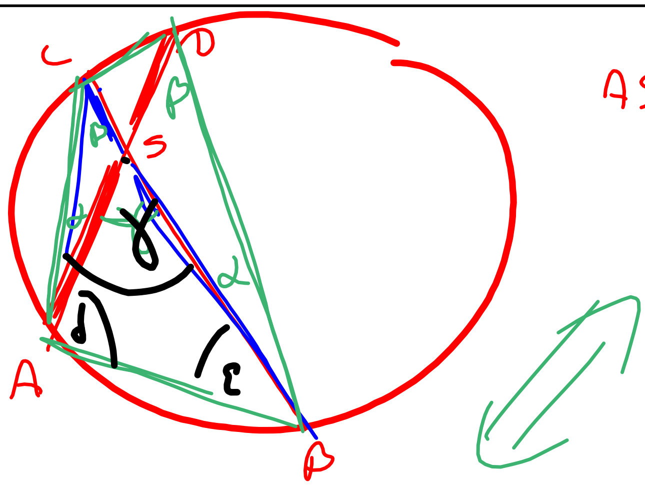




$PA \cdot PB = PC \cdot PD$

$\gamma = \alpha + \beta$

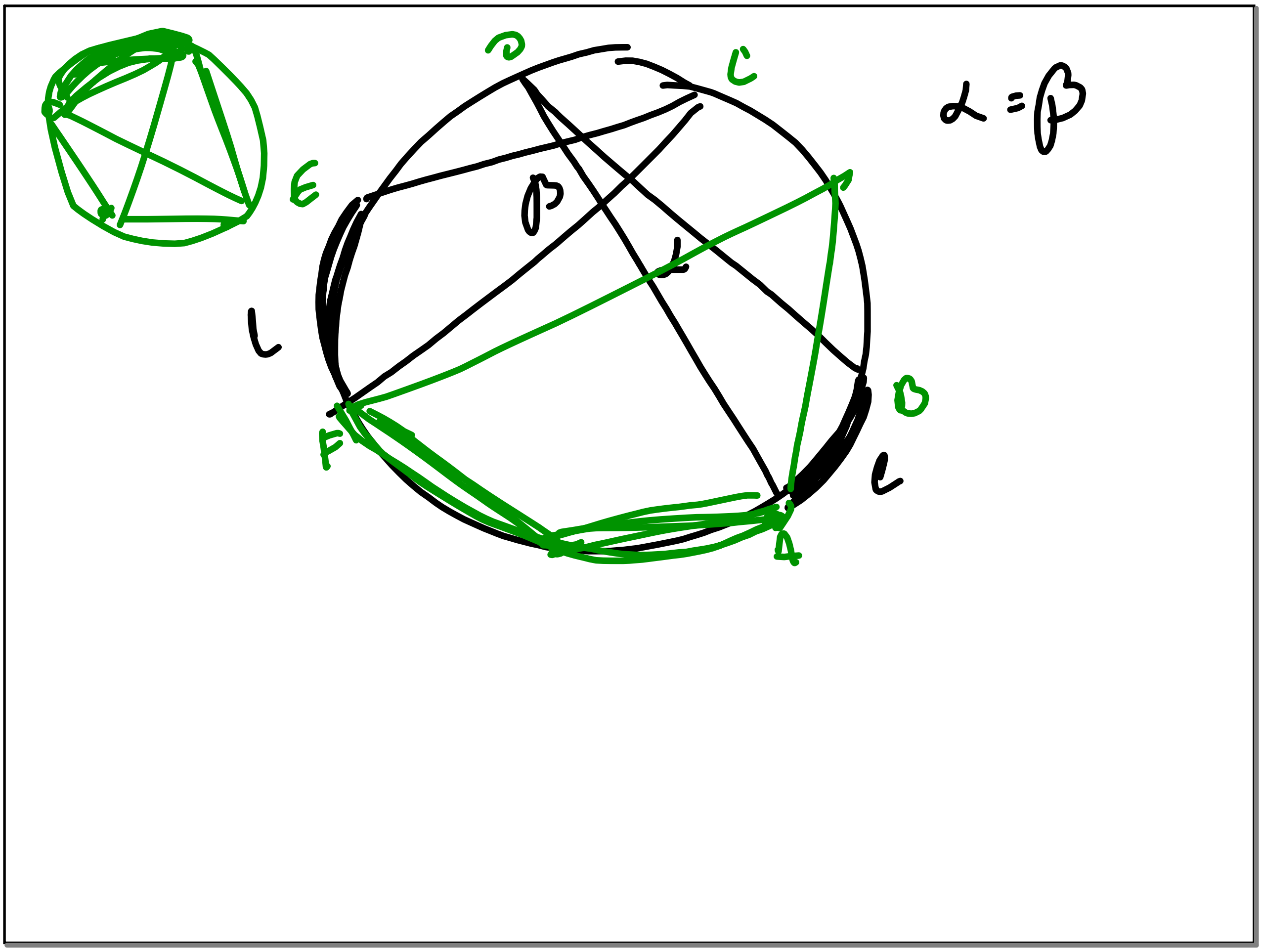
$\gamma = 180° - (\delta + \varepsilon)$



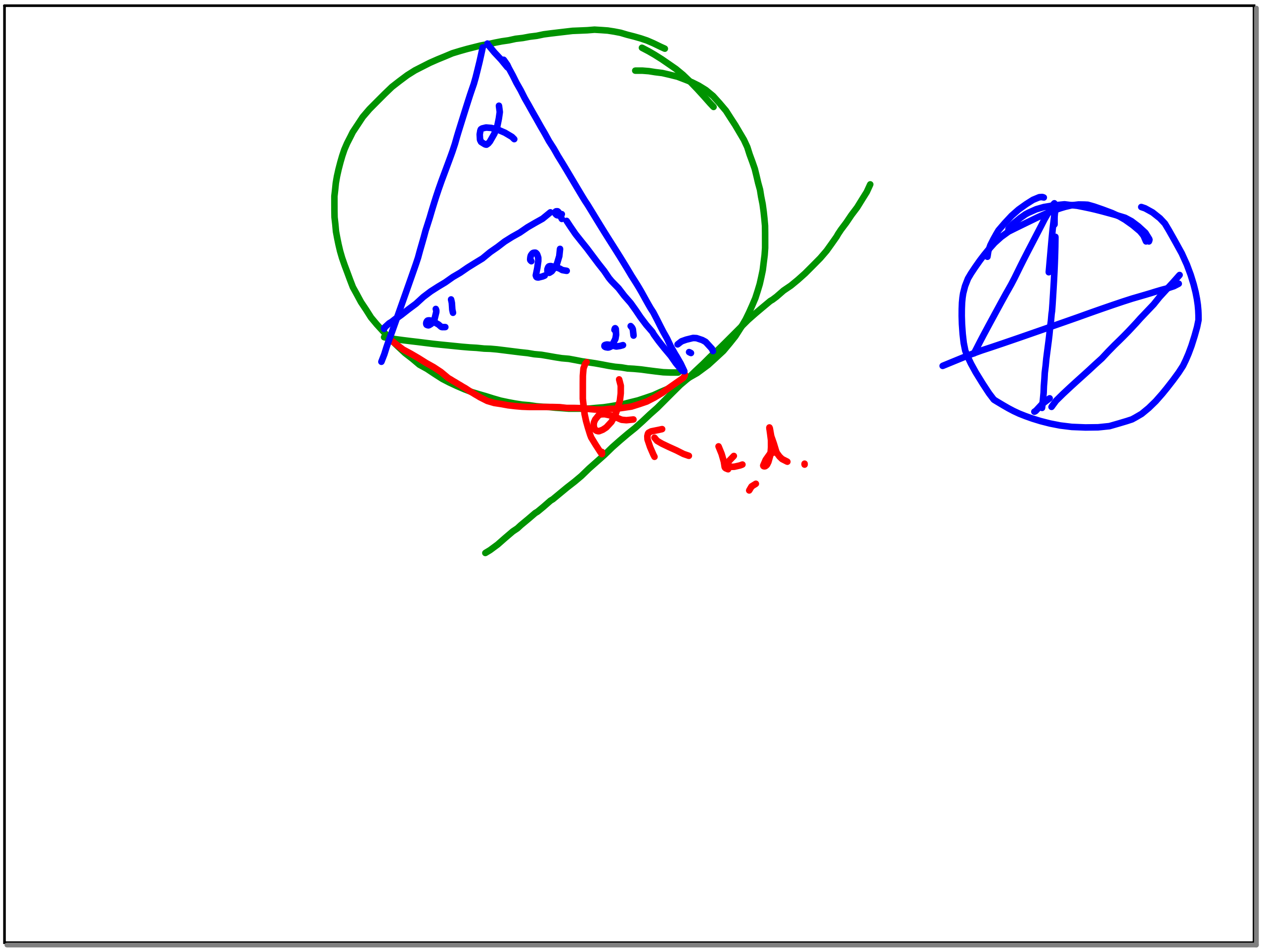
$AS \cdot SD = BS \cdot CS$

$\triangle BSD \sim \triangle ASC$

$\frac{AS}{SB} = \frac{CS}{SD}$



a
C
E
β
α
F
B
A
α = β



α
2α
α'
α'
α
k.l.

$$\log_a b^2 = 2\log_a |b| \qquad b \neq 0$$

$$\log_{a^n} b = \frac{1}{n}\log_a b = \log_a b^{\frac{1}{n}}$$

$$\log_a b = \frac{1}{\log_b a}$$

$$\log_a b \cdot \log_b c = \log_a c$$

$$\cancel{\log_a b} \cdot \frac{\log_a c}{\cancel{\log_a b}} = \underline{\log_a c}$$

$$(a^b)^c = (a^c)^b$$

Z: $2^a + 2^{-a} = 3 \quad |(\ )^2$

T: $\underbrace{4^a + 4^{-a}}_{(2^a+2^{-a})^2 - 2} = 7$

$$4^a + 2 + 4^{-a} = 9$$

$$(2^a + 2^{-a})^2 - 2$$

$\sin(\alpha+\beta) + \sin(\alpha-\beta)$ -

$\sin\alpha + \sqrt{3}\cos\alpha$

$y = 2^{\sin x + \cos x}$ ↗

$\sin(45+\alpha)$

$u(x) = \sin x + \cos x =$

$\sqrt{2}\left(\underset{\cos 45}{\frac{\sqrt{2}}{2}}\sin x + \underset{\sin 45}{\frac{\sqrt{2}}{2}}\cos x\right) =$

$\sqrt{2}\left(\sin(45+x)\right)$

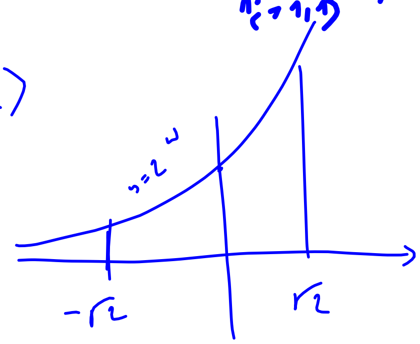
$\sqrt{2} \approx 1{,}41$

$y = 2^u \quad \langle -\sqrt{2}, \sqrt{2} \rangle$

$y = 2^u \quad u \in \langle -\sqrt{2}, \sqrt{2} \rangle$

$y \in \langle 2^{-\sqrt{2}}; 2^{\sqrt{2}} \rangle$

$2^{1{,}41}$



Czas połowicznego rozpadu pierwiastka to okres, jaki jest potrzebny, by ze 100% pierwiastka pozostało 50% tego pierwiastka. Oznacza to, że ilość pierwiastka pozostała z każdego grama pierwiastka po x okresach rozpadu połowicznego wyraża się wzorem $y = \left(\frac{1}{2}\right)^x$. W przypadku izotopu jodu ^{131}I czas połowicznego rozpadu jest równy 8 dni. Wyznacz najmniejszą liczbę dni, po upływie których pozostanie z $1g$ ^{131}I nie więcej niż $0,125g$ tego pierwiastka.

$\frac{1}{8} = \left(\frac{1}{2}\right)^3$

$3 \cdot 8 = 24$

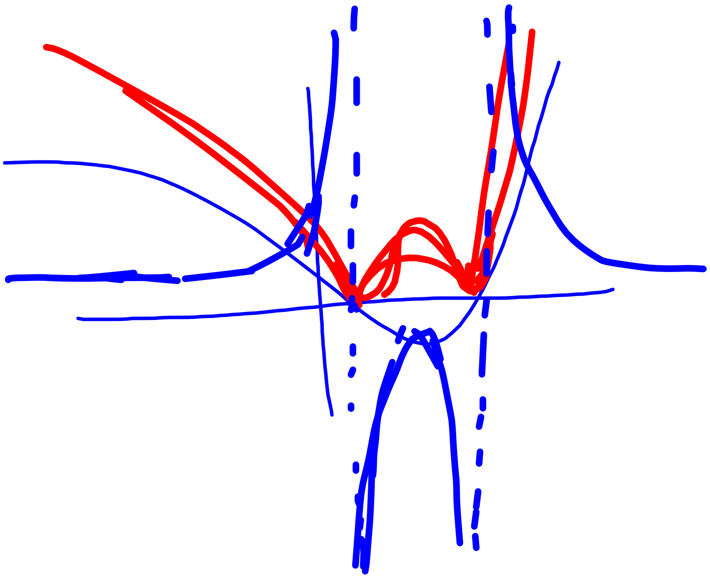
$f(x)$

$\left(f(x)\right)^2$

2^2

$|f(x)|$

$\frac{1}{f(x)}$



$D_f: x \in (-\infty, x_0) \cup (x_0, x_1) \cup (x_1, +\infty)$

poziom PION poziom

$\lim_{x \to x_0, x_1} f(x) = \pm\infty \Rightarrow$ as pion $x = x_0$, $x = x_1$

$\lim_{x \to \pm\infty} f(x) = a \Rightarrow \exists$ as poziom $y = a$

$\lim_{x \to \pm\infty} f(x) = \pm\infty \Rightarrow$ sprawdź ukośną

$y = ax + b$

$\boxed{a = \lim_{x \to \pm\infty} \frac{f(x)}{x} \neq \infty}$

$b = \lim_{x \to \pm\infty} (f(x) - ax) \neq \infty$

$f(x)$ - wymierna $\Rightarrow$ as poziom $y = a \neq 0$ $\Leftrightarrow$ st L = st M

as poziom $y = 0$ $\Leftrightarrow$ st L < st M

as ukośn $\Leftrightarrow$ st L = st M + 1

$\frac{x^3+2}{x^2+1} \to +\infty$, $x \to +\infty$

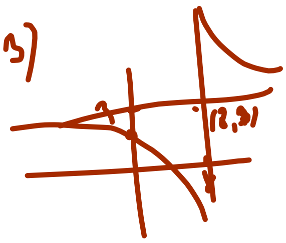
$\frac{x^3+2}{x^3+x} \to 1 = a$

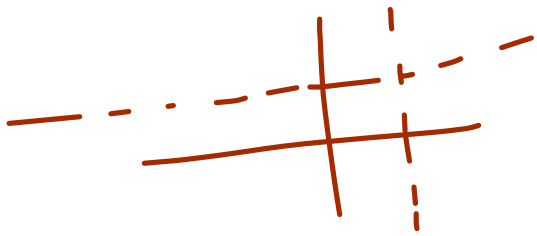
$f(x) = \boxed{\frac{qx+r}{x-p}} = \frac{q(x-p)+r-qp}{x-p} =$

$= \frac{r-qp}{x-p} + q = \boxed{\frac{a}{x-p} + q}$

$f(x) = \frac{3x-5}{x-8}$, $x \neq 8$

$S(8, 3)$





$f(x) = x^2+8x$

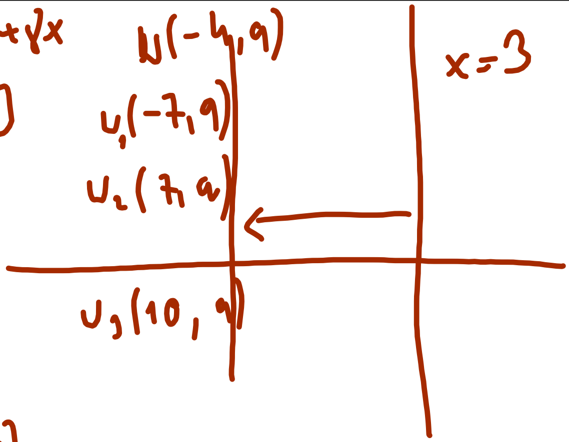
$\downarrow [-3,0]$

$f(\underline{x}+3)$

$\downarrow S_{OY}$

$f(\underline{-x}+3)$

$\downarrow [3,0]$



$f(-(x-3)+3) = f(-x+6) = (-x+6)^2 + 8(-x+6)$

$x^2-12x+36-8x+48$

$x^2-20x+84$

$x=10$

$f(x) = x^2+2x$

$\downarrow$

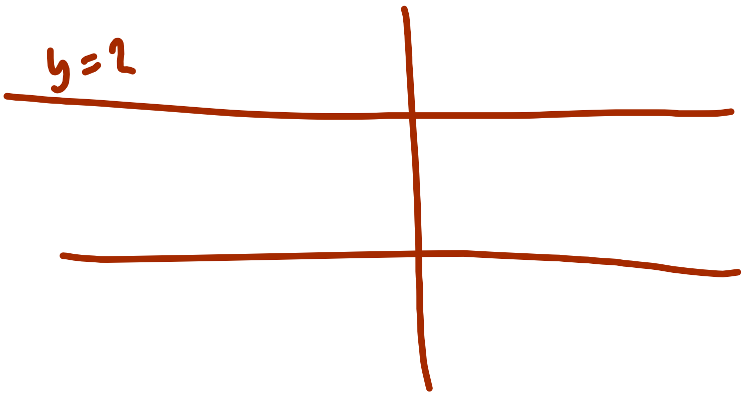
$f(x)-2$

$\downarrow S_{OX}$

$-(f(x)-2)$

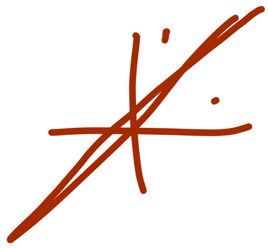
$\downarrow [0,2]$

$-f(x)+2+2 = -f(x)+4$



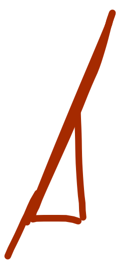
$$f(x) \xrightarrow{S_{(0,0)}} -f(-x)$$

$$y=f(x) \xrightarrow{S_{y=x}} x=f(y)$$



$$\vec{u}=[x_u, y_u]=x_u\left[1, \frac{y_u}{x_u}\right]$$

$$\underline{[1, a]} \parallel \underline{y=ax+b}$$



$\vec{u} = [3, 5]$ $\qquad C(8,2)$

$3[1, \frac{5}{3}] \to -\frac{3}{5}\,1$

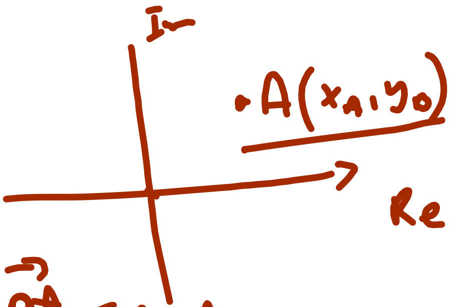
$\vec{u} \parallel k \wedge C \in k \Rightarrow k: y = \frac{5}{3}(x-8)+2$

$\vec{u} \perp l \wedge C \in l \Rightarrow l: y = -\frac{3}{5}(x-8)+2$

$[3,5] \parallel 5x - 3y + c = 0$

$\vec{AB} = B - A$ $\qquad i = \sqrt{-1}$

$\boxed{A = \vec{OA}}$



$\vec{AB} = \vec{AO} + \vec{OB} = \vec{OB} - \vec{OA} = B - A$

$B = A + \vec{AB}$ $\qquad f(x) \xrightarrow{(p,q)} f(x-p)+q$

Z:

T: $\sqrt{2} \in \mathbb{R} \setminus \mathbb{Q}$

D: Hp $\sqrt{2} \in \mathbb{Q} \Rightarrow \sqrt{2} = \frac{p}{q}$ $\quad p, q \in \mathbb{Z}_+$, $q \neq 0$

(Z-k) $\underline{NWD(p,q) = 1}$

$q\sqrt{2} = p \quad |()^2$

$2q^2 = p^2 \Rightarrow 2|p \Rightarrow p = 2m$

$2q^2 = 4m^2$

$q^2 = 2m^2 \Rightarrow 2|q$ $\quad$ sprz. z zał. $NWD(p,q) \neq 1$

$\Downarrow$

Hp jest fałsz. $\Rightarrow$

T – jest prawd.

$\boxed{an^2+bn}$ $\quad$ (c=0)

$$\begin{cases} a_1 = S_1 \\ a_n = S_n - S_{n-1} \quad \underline{n > 1} \end{cases}$$

$$\boxed{S_n = n^2 - 2n}$$

a_n oblicz.

$an^2 + bn + c$ ← $a_1 \neq S_1$

$a_n = S_n - S_{n-1}$ $- c$ d

$r = a_n - a_{n-1} \in \mathbb{R}$ $-$

$q = \frac{a_n}{a_{n-1}} \in \mathbb{R}$

$S_n = n^2 - 3n + 2$ $a_1 = 0$

$S_n = n^2 - 3n$ $a_1 = -2$

$$\left(\frac{ax+b}{cx+d}\right)' = \frac{\text{const}}{(cx+d)^2}$$

3.09.2018

THE

END 2021.04.30