$y' = \sqrt[3]{y^2} \qquad x \in \mathbb{R} =: I$

- $y \equiv 0$ (na $\mathbb{R}$)

- $y' = \underbrace{\sqrt[3]{y^2}}_{g(y)} \cdot \underbrace{1}_{h(x)}$

0

$J_1 = (-\infty, 0)$

$J_2 = (0, \infty)$

- $$\frac{\overset{dy/dx}{y'}}{\sqrt[3]{y^2}} = 1$$

$$\int \frac{1}{\sqrt[3]{y^2}}\, dy = \int 1 \, dx$$

$$\underbrace{3y^{1/3}}_{G(y)} = \underbrace{x}_{H(x)} + c$$

- Fix $I = \mathbb{R}$

$J_1 = (-\infty, 0)$

Fix $c \in \mathbb{R}$

$x \in I \; : \quad H(x) + c \in G(J_1)$

$\underbrace{3\sqrt[3]{y}}$ $(-\infty, 0)$

$x + c \in (-\infty, 0)$

$x + c < 0$

$\boxed{x < -c}$

$c \in \mathbb{R}$

$x \in (-\infty, -c)$

$$3\sqrt[3]{y} = x + c$$

$$\sqrt[3]{y} = \frac{x+c}{3}$$

$$y = \left(\frac{x+c}{3}\right)^3$$

- Fix $I \in \mathbb{R}$

$J_2 = (0, \infty)$

Fix $c \in \mathbb{R}$

$\underbrace{G(J_2)}$ $3\sqrt[3]{y}$ $(0, \infty)$

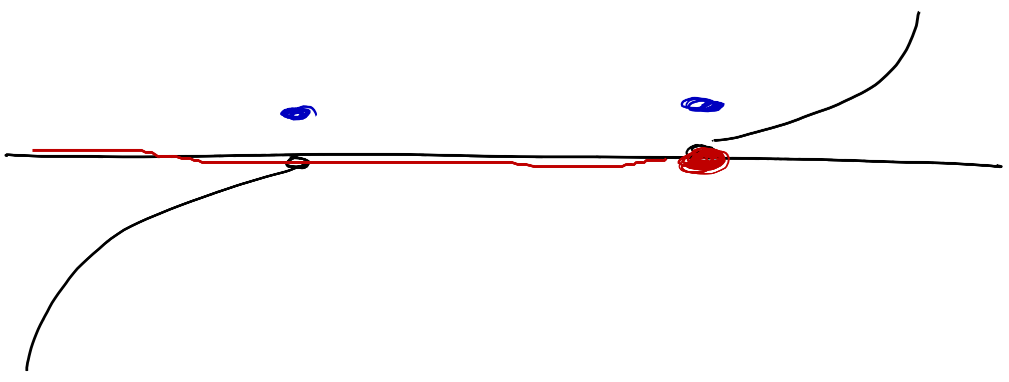
$x + c \in (0, \infty)$

$x + c > 0$

$\boxed{x > -c}$

$$3\sqrt[3]{y} = x + c$$

$$y = \left(\frac{x+c}{3}\right)^3$$



$c \in \mathbb{R}$

• $$y = \begin{cases} 0 & x < -c \\ 0 & x = -c \\ \left(\frac{x+c}{3}\right)^3 & x > -c \end{cases}$$

$$\lim_{x \to (-c)^-} 0 = 0 = \lim_{x \to (-c)^+} \left(\frac{x+c}{3}\right)^3$$

• $c \in \mathbb{R}$

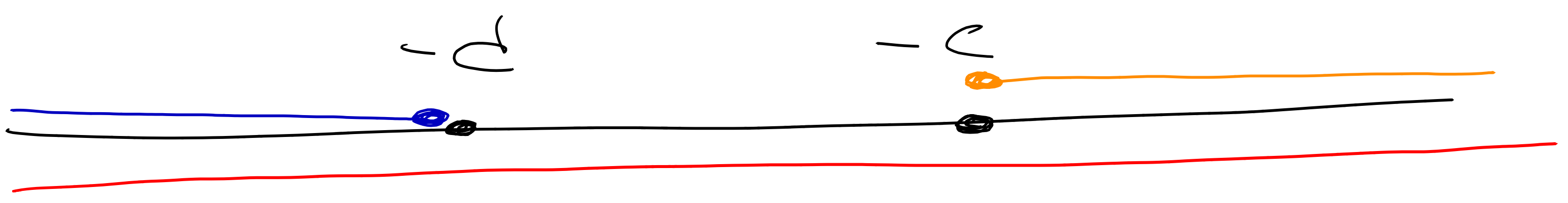
$$y = \begin{cases} \left(\frac{x+c}{3}\right)^3 & x < -c \\ 0 & x = -c \\ 0 & x > -c \end{cases}$$

• $c, d \in \mathbb{R}$ $\quad d \geq c$

$$y = \begin{cases} \left(\frac{x+d}{3}\right)^3 & x < -d \\ 0 & x = -d \\ 0 & x \in (-d, -c) \\ 0 & x = -c \\ \left(\frac{x+c}{3}\right)^3 & x > -c \end{cases}$$

(Pozn $c = d$)

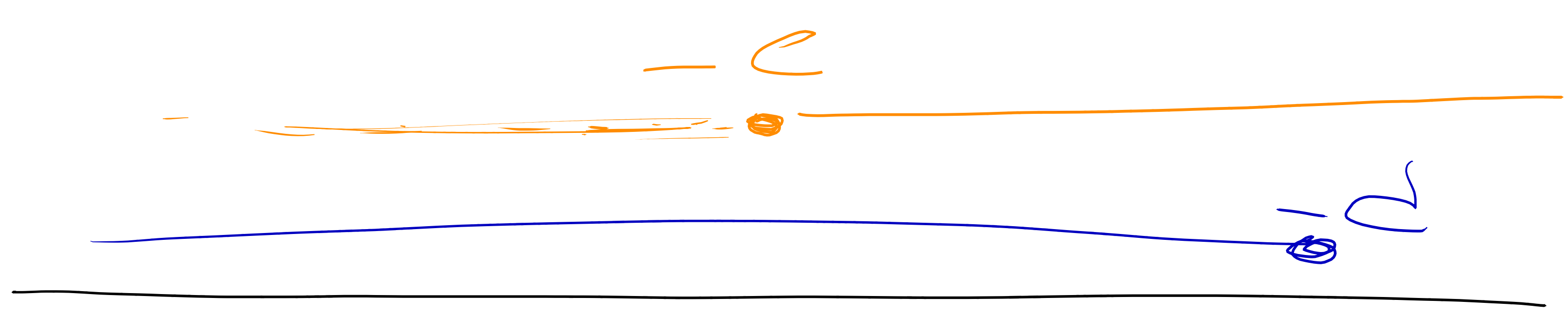
Bez obrazu



$y \equiv 0$

$x > -c$

$x < -d$



$g(y) \cdot h(x)$ spoj.

$\searrow$ $\quad\searrow$ ~ $-c$

0

$\nearrow$

wyjść. lim

1 spoj ~ $-c$

$3\sqrt[3]{y^2}$ spoj. ~ 0

$I = (0, \infty)$

$J = (0, \infty)$ $\quad y \equiv 0$

$\downarrow$

$\frac{1}{2}\sqrt{y} = \frac{1}{2}\sqrt{x} + c$

$(0, \infty)$ $\quad \frac{1}{2}\sqrt{x} + c > 0$

$\boxed{\sqrt{x} > -2c}$

$c > 0$

$\boxed{\begin{aligned} y &= (\sqrt{x} + 2c)^2 \\ x &> 0 \end{aligned}}$

$x > \cancel{(-2c)^2}$

$c = 0$

$c < 0$ $\quad \boxed{x > 4c^2}$

$\boxed{\text{lopi ...}}$

$4c^2 \longrightarrow$

$= \lim_{x \to 4c^2 +} (\sqrt{x} + 2c)^2$

$\sqrt{(4c^2)}$