

$V = \pi r^2 h$
 $EF = a$
 $ES' = \frac{1}{2}a$

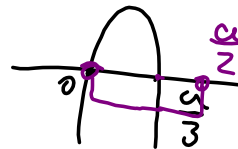
$ES = \sqrt{b^2 - \frac{a^2}{4}}$
 $H = \sqrt{b^2 - \frac{a^2}{4} - \frac{a^2}{4}} = \sqrt{b^2 - \frac{a^2}{2}}$

$\frac{H-h}{v} = \frac{2H}{a} \Rightarrow (H-h)a = 2Hv = Ha - ha \Rightarrow h = \frac{Ha - 2Hv}{a}$
 $r = \frac{(H-h)a}{2H}$

$V = \pi v^2 \frac{H(a-2v)}{a} = \frac{H\pi}{a} v^2 (a-2v)$

$V(v) = \frac{H\pi}{a} (-2v^3 + av^2)$

$v \in (0, \frac{a}{2})$



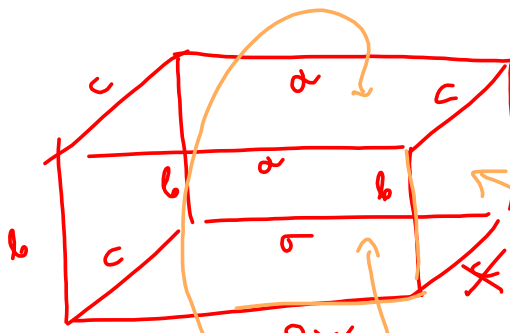
$V'(v) = \frac{H\pi}{a} (-6v^2 + 2av) = \frac{H\pi}{a} (-6v)(v - \frac{a}{3})$

v	$(0, \frac{a}{3})$	$\frac{a}{3}$	$(\frac{a}{3}, \frac{a}{2})$
V'	+	0	-
V	↗		↘

$y_{\max L} = y_{\max}(\frac{a}{3})$

$h = \frac{Ha - 2Hv}{a} = \frac{H(a - \frac{2}{3}a)}{a}$
 $= \frac{1}{3}H = \frac{1}{3}\sqrt{b^2 - \frac{a^2}{2}}$

Odp: Wymiary walca $\Rightarrow \frac{a}{3}$ $H = \frac{1}{3}\sqrt{b^2 - \frac{a^2}{2}}$



$$V = 2x^2 \cdot h = 8$$

$$h = \frac{4}{x^2} \quad hx^2 = 4$$

$$h = \frac{4}{x^2}$$

$$x + 2x + \frac{4}{x^2} < \frac{28}{4} = 7 \quad | x > 0$$

$$P_c = 2 \cdot 2x^2 + \frac{8}{x} + \frac{16}{x} = 4x^2 + \frac{24}{x} = P(x) \quad x > 0$$

$$\text{II: } x \in (1, 2)$$

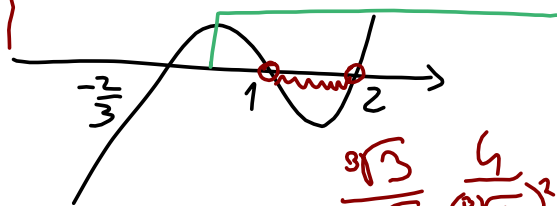
$$P'(x) = \frac{8x^3 - 24}{x^2} = \frac{8(x - \sqrt[3]{3})(+)}{x^2 +}$$

$$3x^3 + 4 - 7x^2 < 0$$

$$3x^3 - 7x^2 + 4 < 0$$

$$(x-1)(3x^2-4x-4) < 0$$

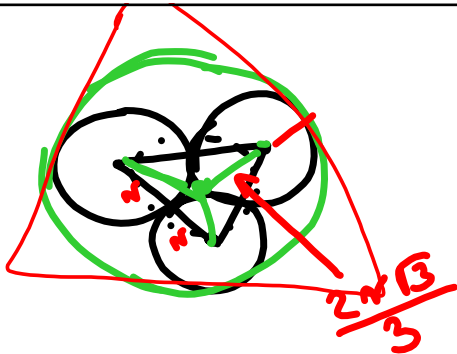
$$(x-1)(x-2)(3x+2) < 0$$



$$y_{\min} \text{ dla } x = \sqrt[3]{3}$$

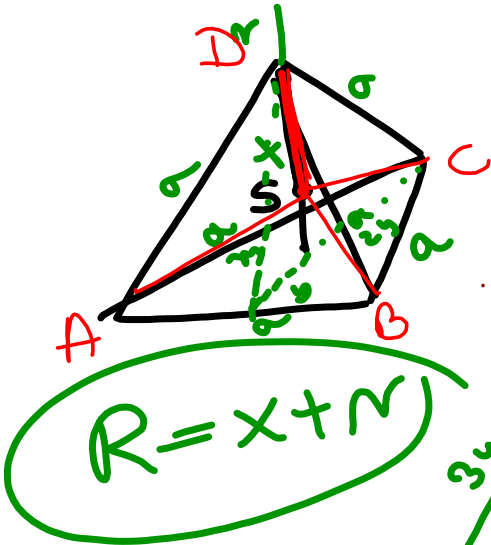
odp:

$$\sqrt[3]{3} \times 2 \cdot \sqrt[3]{3} \times \frac{4}{3} \sqrt[3]{3}$$

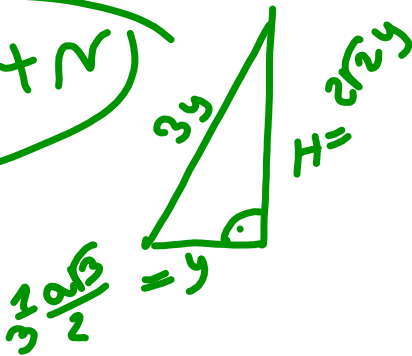


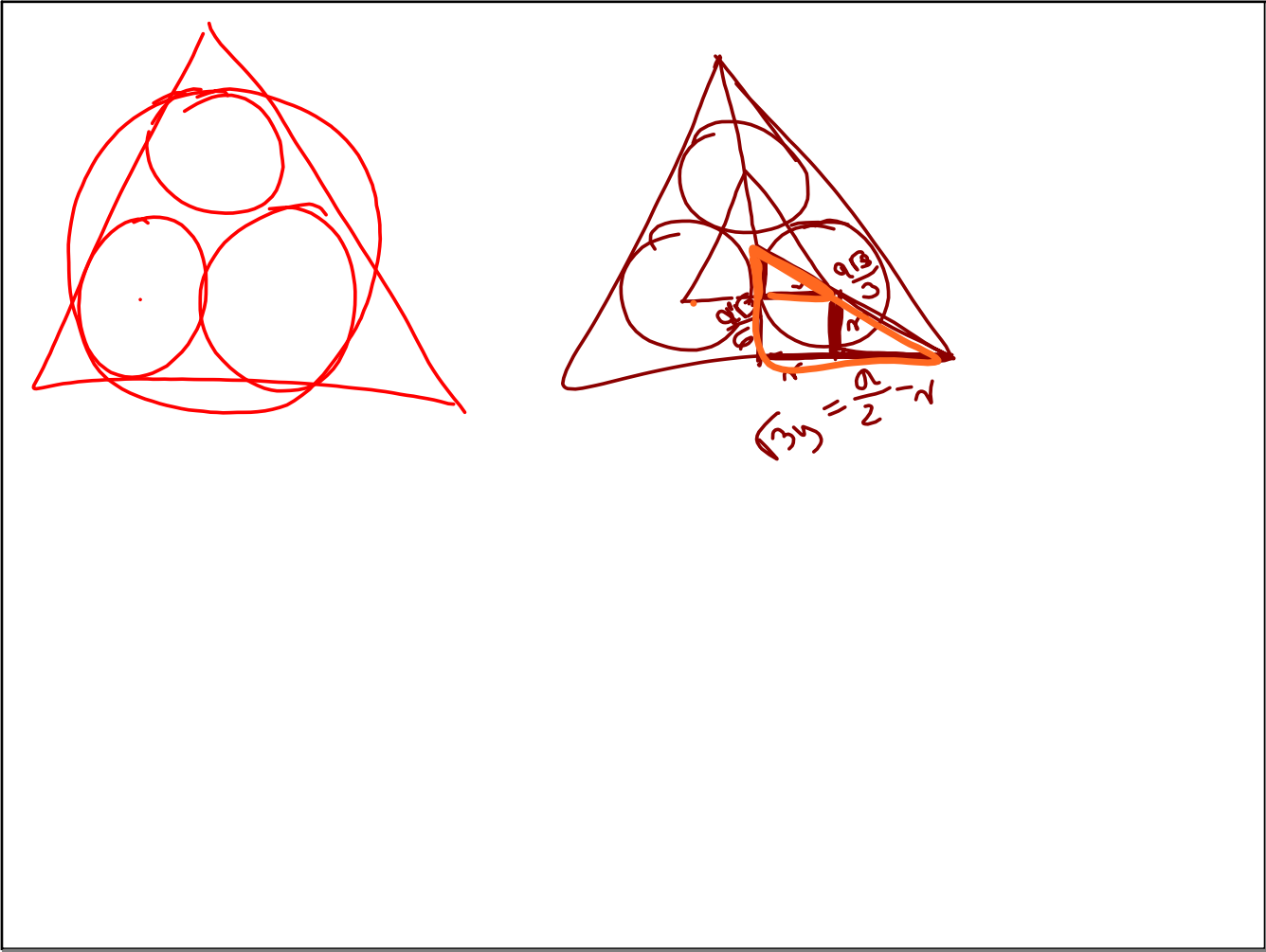
$$H = \frac{2\sqrt{3}}{3}$$

$$H = \frac{2\sqrt{3} \cdot a\sqrt{3}}{6} = \frac{a\sqrt{3}}{3}$$



$$R = x + \sqrt{3}$$





$$\frac{(\operatorname{tg} x)^{\cos x}}{(1 - \operatorname{tg} x)^{\cos x}} = \sin x + \cos x$$

$$\left(-\frac{\pi}{4} + k\pi; \frac{\pi}{4} + k\pi\right)$$

$$\updownarrow \\ |\operatorname{tg} x| < 1$$

$$\frac{\sin x}{\cos x - \sin x} = \sin x + \cos x$$

$$\sin x = \cos^2 x - \sin^2 x = 1 - 2\sin^2 x$$

$$2\sin^2 x + \sin x - 1 = 0$$

$$(\sin x + 1)(2\sin x - 1) = 0$$

$$\sin x = -1 \vee \sin x = \frac{1}{2}$$

$$\left(-\frac{\pi}{2} + 2k\pi; \frac{\pi}{2} + 2k\pi\right)$$

$$\frac{\pi}{6} + 2k\pi$$

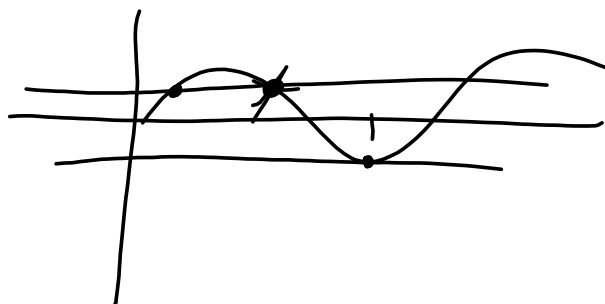
OK

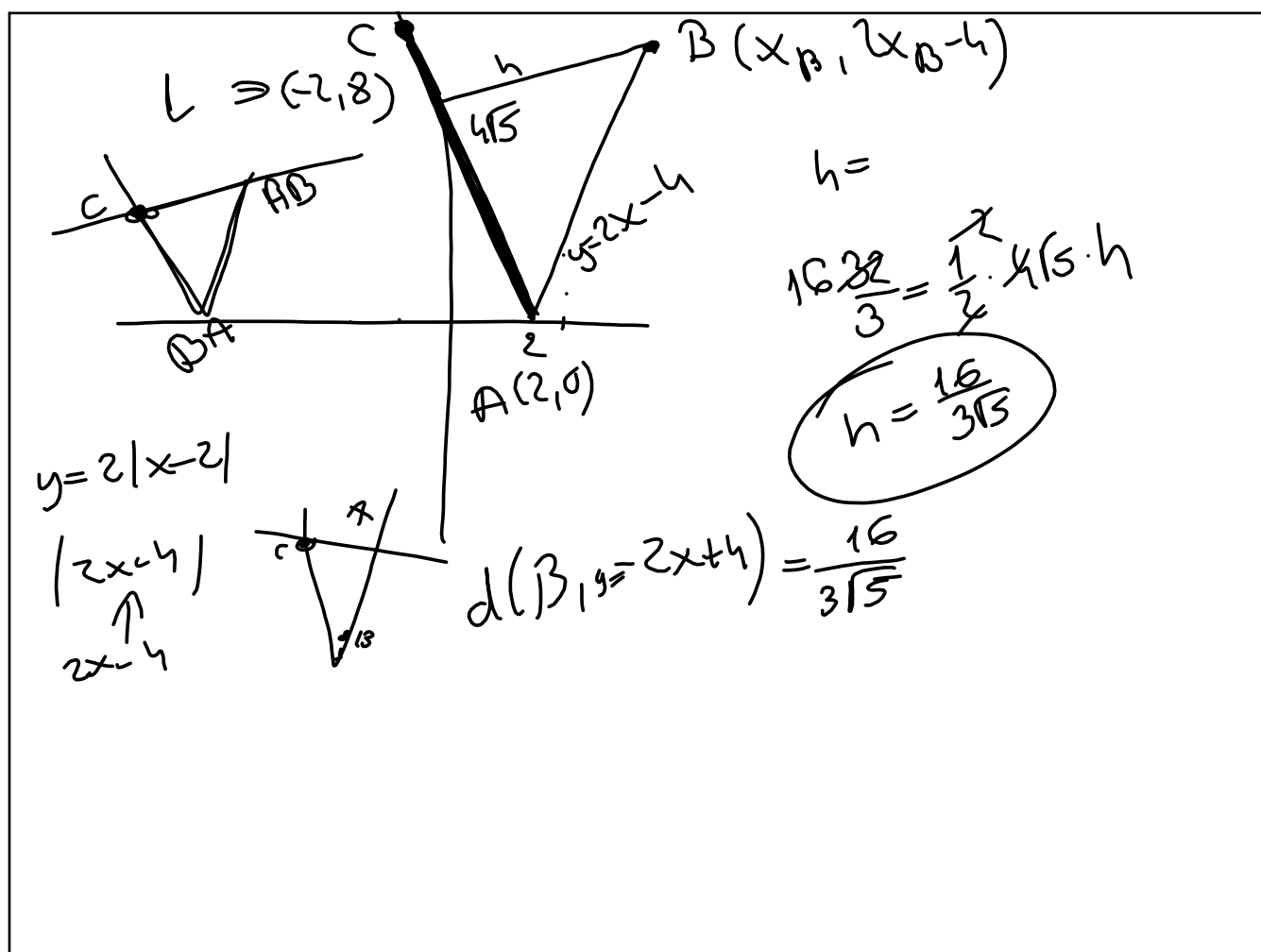
$$\frac{5\pi}{6} + 2k\pi$$

OK

$$\frac{3\pi}{2} + 2k\pi$$

FUJ





$$a = \lim_{x \rightarrow x_0} \frac{f(x) - f(x_0)}{x - x_0}$$

 $f'(x_0)$

$$a = f'(x_0)$$

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

$$f'(x) = \underline{2x}$$

$$f(x) = x^6$$

$$f'(x) = 6x^5$$

