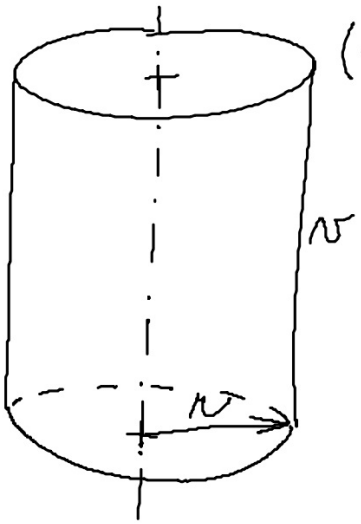
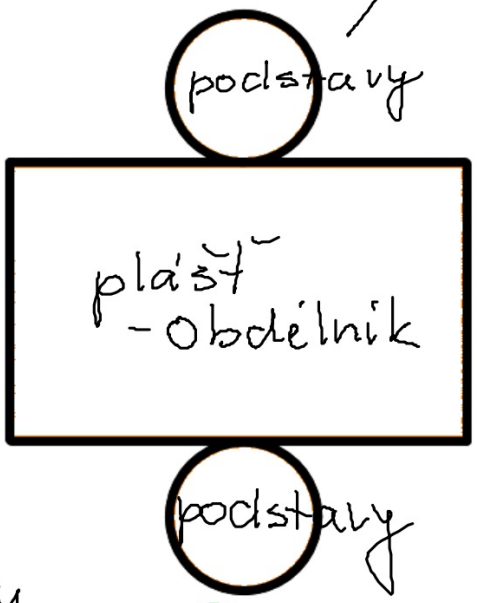
VÁLEC

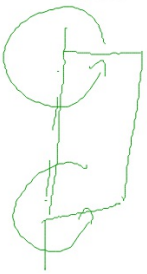


(tvar elipsy)

SÍŤ



- rotační těleso - kolem osy
"rotuje" obdélník



OBJEM

– „vyplnění" tělesa

$V = S_p \cdot v$ — výška tělesa

obsah podstavy

$$V = \pi \cdot r^2 \cdot v$$

$[cm^3]$

$dm^3 = l$

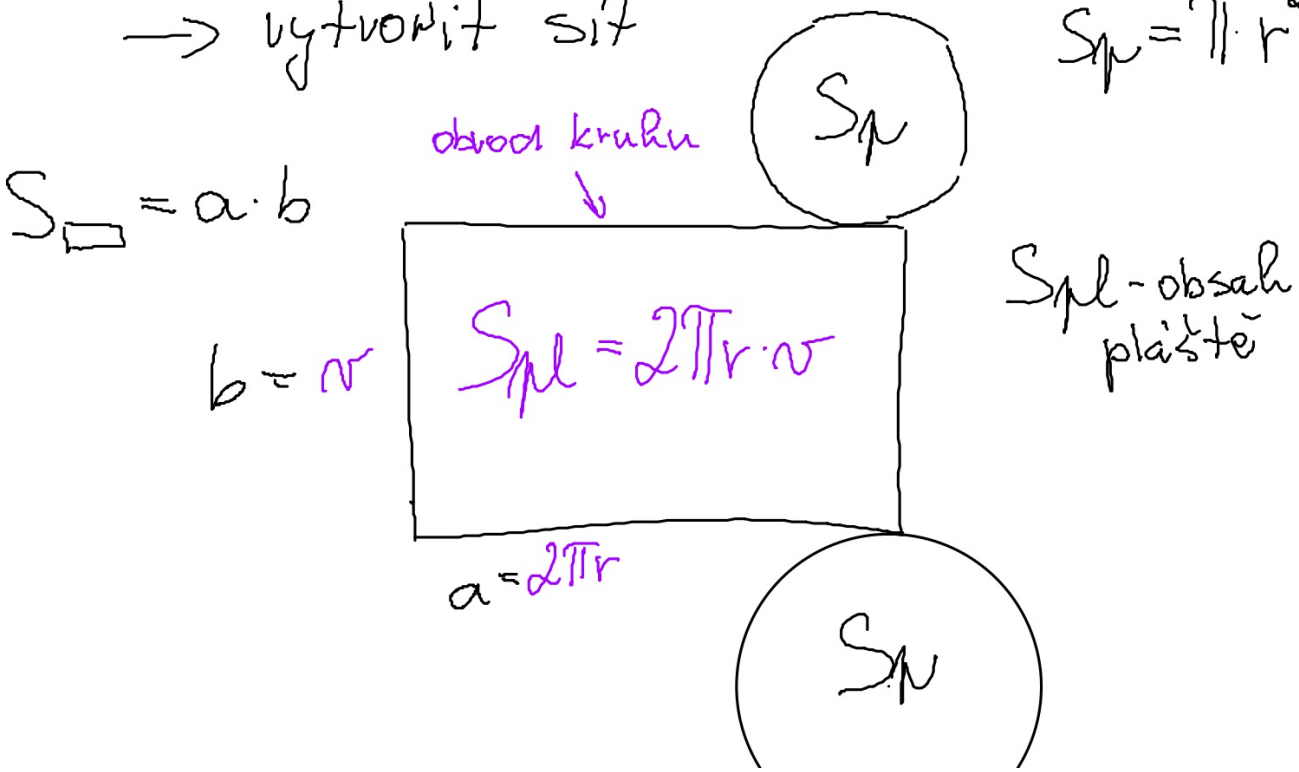
POVRCH

– sečtení obsahů všech stěn

→ vytvořit síť

$S_p = \pi \cdot r^2$

$S_{\square} = a \cdot b$



S_{pl} - obsah pláště

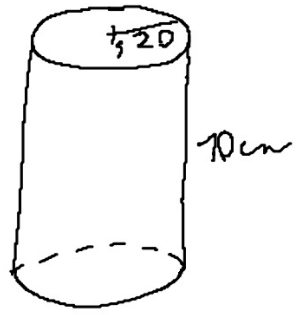
$$S = 2 \cdot S_p + S_{pl}$$

$$S = 2 \cdot \pi r^2 + 2\pi r \cdot v$$

$$S = 2\pi r (r + v)$$

Vypočítejte povrch a objem válce, jestliže platí:
a) r = 2 dm, v = 10 cm

a)



$S = 2 \cdot \pi \cdot r \cdot (r + v)$

$S = 2 \cdot \pi \cdot 20 \cdot (20 + 10)$

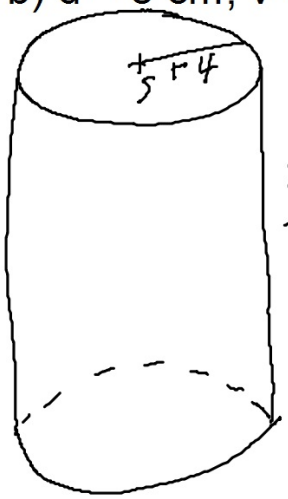
$S = 3769{,}91\ cm^2$

$V = \pi \cdot r^2 \cdot v$

$V = \pi \cdot 20^2 \cdot 10$

$V = 12566{,}37\ cm^3$

b) d = 8 cm, v = 0,05 m



$S = 2 \cdot \pi \cdot r (r + v)$

$S = 2 \cdot \pi \cdot 4 (4 + 5)$

$S = 226,19 \, m^2$

$V = \pi \cdot r^2 \cdot v$

$V = \pi \cdot 4^2 \cdot 5$

$V = 251,33 \, m^3$

$V = \pi \cdot r^2 \cdot n \quad / : \pi r^2$

$$\boxed{n = \frac{V}{\pi r^2}}$$

$V : \pi r^2 = n$

$$n = \frac{V}{\pi r^2}$$

$V = \pi r^2 \cdot n \quad / : \pi n$

$$r^2 = \frac{V}{\pi \cdot n}$$

$$\boxed{r = \sqrt{\frac{V}{\pi \cdot n}}}$$

$$S = 2\pi r(r + v) \quad | : 2\pi r$$

$$r + v = \frac{S}{2\pi r} \quad | - r$$

$$\boxed{v = \frac{S}{2\pi r} - r}$$

$$S = 2\pi r^2 + 2\pi r v \quad | - 2\pi r^2$$

$$2\pi r v = S - 2\pi r^2 \quad | : 2\pi r$$

$$v = \frac{S - 2\pi r^2}{2\pi r}$$

$$\frac{S}{2\pi r} - \frac{2\pi r^2}{2\pi r}$$