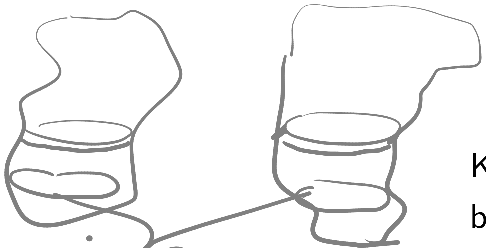
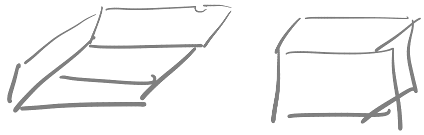
Matematika 2, 19. svibnja, 2021.

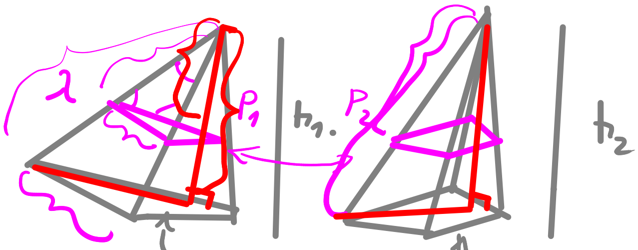
Cavalierijev princip



$\Rightarrow V_1 = V_2$

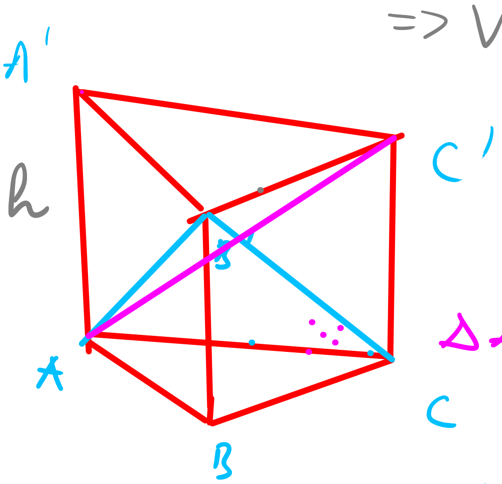


Korolar: svake dvije piramide koje imaju jednake baze i jednake visine imaju isti volumen.

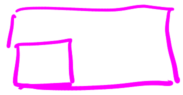


$h_1 = h_2$

$B_1 = B_2 \Rightarrow V_1 = V_2$



λ^2

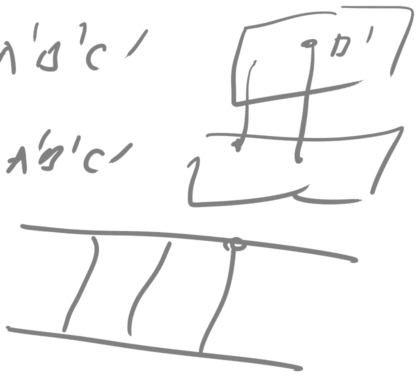


$\Rightarrow P_1 = P_2$

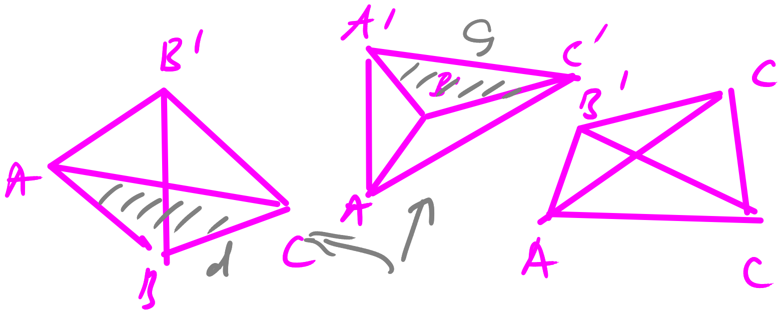
$\Delta AA'C'B'$

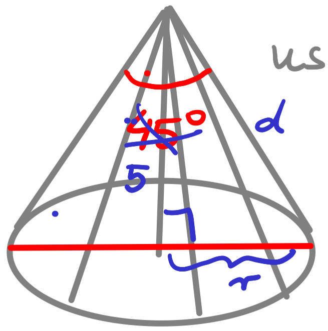
$\Delta ABC \cong \Delta A'B'C'$

$P_{\Delta ABC} = P_{\Delta A'B'C'}$



$\Delta ABB'C$





uspravni stožac

$H = 5$

$d = 7$

$r^2 = 24$

$r = \sqrt{d^2 - H^2} = \sqrt{49 - 25}$

$V = \frac{1}{3} BH = \frac{1}{3} r^2 \pi \cdot H = \frac{24}{3} \pi \cdot 5 = 40\pi$

$P = B + P_{plašt} = 24\pi + 7\pi\sqrt{24}$

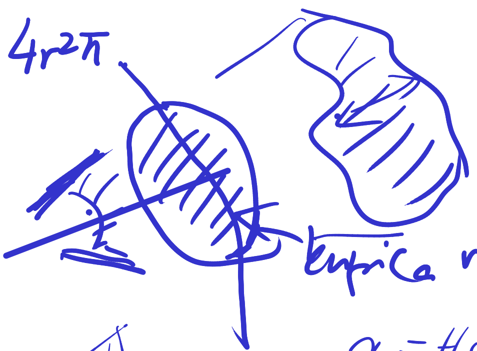
3.14

$12\ 5{,}60$

prostorni kut $\Omega =$

uz kojeg se vidi krug (baza) iz vrha stošca

$4r^2\pi$



kapica na sferi

$\frac{H}{d} = \cos\frac{\theta}{2}$

$d = H\cos\frac{\theta}{2}$

$2r\pi$

$d^2\pi$

$2r\pi : 2d\pi = P_{isj} : P_{kruga}$

$r : d = P_{isj} : d^2\pi$

$P_{isj} = rd\pi = \sqrt{24} \cdot 7 \cdot 3.14$

$r = H\sin\frac{\theta}{2}$

$\frac{r}{5} = \sin\frac{\theta}{2}$

$\cos \frac{45}{2}$ $\qquad \cos 45^\circ = \frac{1}{\sqrt{2}}$

$$\cos 2\alpha = \cos(\alpha+\alpha) = \cos\alpha\cos\alpha - \sin\alpha\sin\alpha \quad (1-\cos^2\alpha)$$
$$= 2\cos^2\alpha - 1$$

$$2\cos^2\alpha = 1+\cos 2\alpha$$

$$\cos^2 \overset{22.5}{\alpha} = \frac{1+\cos \overset{45}{2\alpha}}{2} \qquad \cos^2 22.5^\circ = \frac{1+\frac{1}{\sqrt{2}}}{2} = \frac{\frac{\sqrt{2}+1}{\sqrt{2}}}{\frac{2}{1}}$$

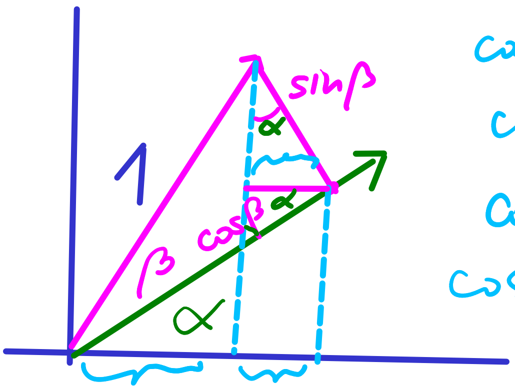
$$\cos^2 22.5^\circ = \frac{1+\frac{\sqrt{2}}{2}}{2} = \frac{1}{2}+\frac{\sqrt{2}}{4}$$

$\sqrt{2} = 1.4142136$

$$\cos 22.5^\circ = \sqrt{\frac{1}{2}+\frac{\sqrt{2}}{4}} \qquad d = \frac{5}{\sqrt{\frac{1}{2}+\frac{\sqrt{2}}{4}}} =$$

$$\frac{H}{d} \qquad H=5 \qquad 0.5 + 1.4142/4$$

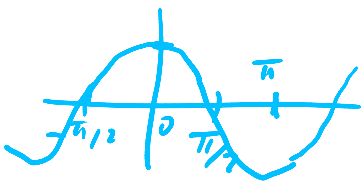
$$= \frac{5}{0.923879} = 5.4196$$

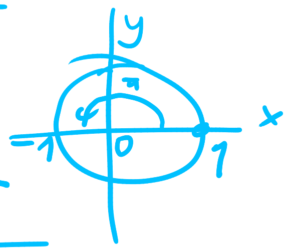


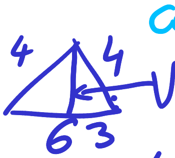
$$\cos(\alpha \pm \beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$$
$$\cos(\alpha+\beta) = \cos\alpha\cos\beta - \sin\alpha\sin\beta$$
$$\cos(\alpha-\beta) = \cos\alpha \underbrace{\cos(-\beta)} - \sin\alpha \underbrace{\sin(-\beta)}$$
$$\cos(\alpha+(-\beta)) = \cos\alpha \underline{\cos\beta} + \sin\alpha\sin\beta$$

$(\cos(\alpha+\beta))$

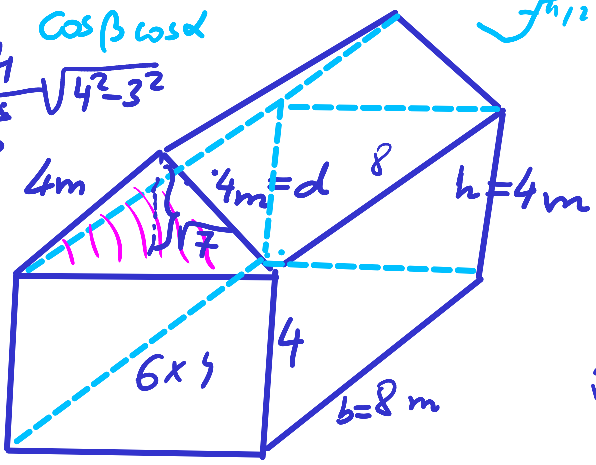
$\cos\beta\cos\alpha$







$\sqrt{4^2-3^2}$



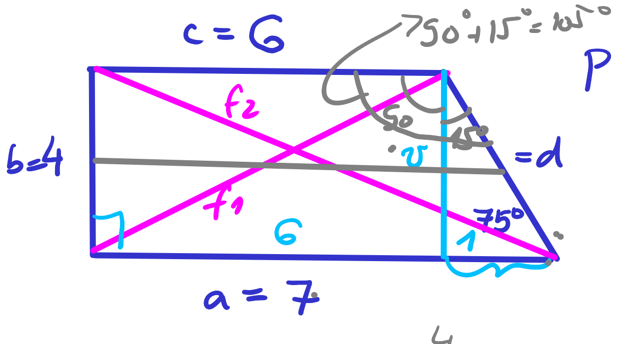
$6\cdot 8\cdot 4 \qquad 8\cdot \frac{6\cdot\sqrt{7}}{2}$

$$V = a\cdot b\cdot h + b\cdot P_\Delta = 192+24\sqrt{7}$$
$$= 202.58\ m^3$$

$$P = 2\times6\times4 + 2\times3\sqrt{7} + 2\times4\times8 + 2\times4\times8$$

izuzev bez poda

$$= 48 + 6\sqrt{7} + 64 + 64$$
$$= 176 + 6\sqrt{7} = 191.87\ m^2$$



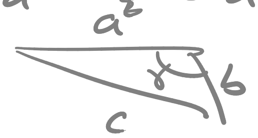
$v = b$

$P = 6 \times 4 + 1 \times 4/2 = \underline{\underline{26}}$

$d = \sqrt{1^2 + 4^2} = \sqrt{17}$

$f_1 = \sqrt{6^2 + 4^2} = \sqrt{36+16} = \sqrt{52} = 2\sqrt{13}$

$f_2^2 = \underbrace{36}_{6^2} + \underbrace{17}_{d^2} - 2 \cdot \underbrace{6}_{c}\underbrace{\sqrt{17}}_{d} \cos 105°$



$P = \frac{6+7}{2} \cdot \overset{4}{v} = \frac{52}{2} = \underline{\underline{26}}$

$a^2 + b^2 - c^2 = 2ab\cos\gamma$

$f_2 = \sqrt{53 - 12\sqrt{17}\cos 105°}$ $\quad c^2 = a^2 + b^2 - 2ab\cos\gamma$