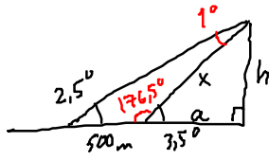


MAA3 Mallivastaukset

① a) $\frac{1}{250000} = \frac{13,2 \text{ cm}}{x} \rightarrow x = 3300000 \text{ cm} = 33 \text{ km}$

b) $\left(\frac{1}{250000}\right)^2 = \frac{x}{338000 \text{ km}^2} \rightarrow x = 0,000005408 \text{ km}^2 = 5,4 \text{ m}^2$

②



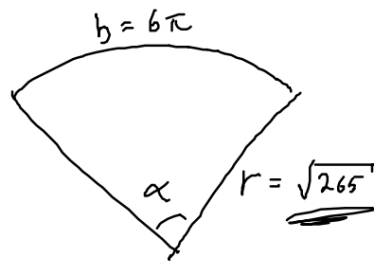
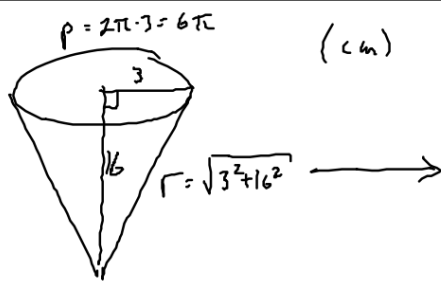
$$\frac{500}{\sin 1^\circ} = \frac{x}{\sin 25^\circ} \rightarrow x = 1249,669$$

$$\sin 3,5^\circ = \frac{h}{x} \rightarrow h \approx 76,29$$

$$\cos 3,5^\circ = \frac{a}{x} \rightarrow a \approx 1247,37$$

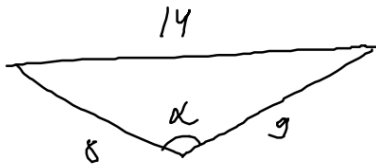
V: korkeus n. 76 m, etäisyydet n. 1250 m ja 1750 m.

(3.)



$$b = \frac{\alpha}{360^\circ} \cdot 2\pi r \rightarrow \alpha = \frac{b \cdot 360^\circ}{2\pi r} = \frac{6\pi \cdot 360^\circ}{2\pi \sqrt{265}} \approx \underline{\underline{66^\circ}}$$

(4.)

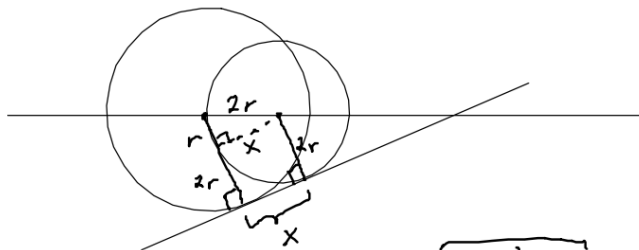


Kosinilauseella

$$14^2 = 8^2 + 9^2 - 2 \cdot 8 \cdot 9 \cdot \cos \alpha$$

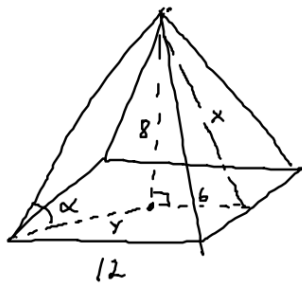
$$\rightarrow \cos \alpha = -0,7542 \rightarrow \alpha = \underline{\underline{110,7^\circ}}$$

5.



$$x = \sqrt{(2r)^2 + r^2} = \underline{\underline{r\sqrt{5}}}$$

6.



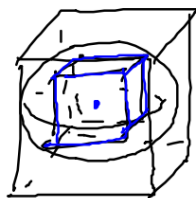
$$x = \sqrt{6^2 + 8^2} = 10$$

$$A = \frac{10 \cdot 12}{2} = \underline{\underline{60}}$$

$$y = \text{puolet pohjan lävistäjästä} = \frac{1}{2} \cdot \sqrt{12^2 + 12^2} \approx 8,4853$$

$$\tan \alpha = \frac{8}{8,4853} \rightarrow \alpha \approx \underline{\underline{43,3^\circ}}$$

⑦ Kirjan teht. 433.



a = pallon halk. = pienemmän kuution
avaruuslävistäjä.

b = pienemmän kuution särmä $\rightarrow$

$$a = \sqrt{b^2 + b^2 + b^2} \Rightarrow a = b\sqrt{3} \Rightarrow b = \frac{a}{\sqrt{3}}$$
$$\rightarrow V_{\text{pieni}} = b^3 = \left(\frac{a}{\sqrt{3}}\right)^3$$

Isom kuution särmä $= a$

$\rightarrow V_{\text{iso}} = a^3 \rightarrow$ kysytty suhde

$$\frac{V_{\text{pieni}}}{V_{\text{iso}}} = \frac{\left(\frac{a}{\sqrt{3}}\right)^3}{a^3} = \left(\frac{1}{\sqrt{3}}\right)^3 \approx \underline{\underline{0,19}}$$