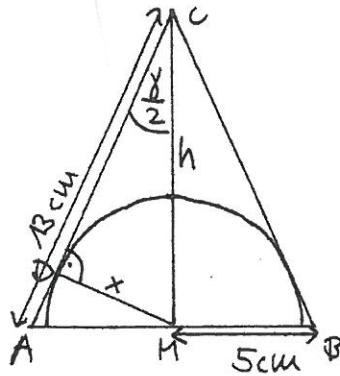


S. 128/4

a) Skizze:



ges: x

$$\triangle AMC : h = \sqrt{(13 \text{ cm})^2 - (5 \text{ cm})^2} = 12 \text{ cm}$$

$$\text{tan } \frac{x}{2} = \frac{5 \text{ cm}}{12 \text{ cm}} \Rightarrow \frac{x}{2} = 22,62^\circ$$

$$\triangle DMC : \sin \frac{x}{2} = \frac{x}{h}$$

$$x = h \cdot \sin \frac{x}{2} = 12 \text{ cm} \cdot \sin 22,62^\circ$$

$$x = 4,62 \text{ cm}$$

b) ges: $V_{\text{Halbkugel}}$ | $O_{\text{Halbkugel}}$

$$V_{\text{HK}} = \frac{1}{2} \cdot \left(\frac{4}{3} x^3 \pi \right) = \frac{2}{3} x^3 \pi = \frac{2}{3} \cdot (4,62 \text{ cm})^3 \cdot \pi$$

$$V_{\text{HK}} = 206,5 \text{ cm}^3$$

$$O_{\text{HK}} = \frac{1}{2} \cdot (4x^2 \pi) + x^2 \pi = 2 \cdot (4,62 \text{ cm})^2 \cdot \pi + (4,62 \text{ cm})^2 \cdot \pi$$

$$O_{\text{HK}} = 201,17 \text{ cm}^2$$

c) $O_{\text{Rest}} = O_{\text{HK}} + A_{\text{Ring}} + M_{\text{Kegel}}$

$$O_{\text{HK}} = 2 \cdot (0,5 \cdot 4,62 \text{ cm})^2 \cdot \pi = 33,53 \text{ cm}^2$$

$$A_{\text{Ring}} = \pi \cdot (r_a^2 - r_i^2) = \pi \cdot (5^2 - 2,31^2) \text{ cm}^2$$

$$A_{\text{Ring}} = 61,78 \text{ cm}^2$$

$$M_{\text{Kegel}} = \underbrace{r}_{\text{Kegel}} \cdot \pi \cdot s = 5 \text{ cm} \cdot \pi \cdot 13 \text{ cm} = 204,2 \text{ cm}^2$$

$$O_{\text{Rest}} = 299,51 \text{ cm}^2$$

