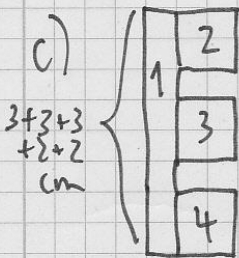


LÖSUNGEN

$$\begin{aligned} 1) \ a) \quad V &= \pi r^2 h = \pi \cdot (6 \text{ cm})^2 \cdot 16 \text{ cm} \\ &= 576 \pi \text{ cm}^3 \\ &\approx 1809,56 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} O &= 2\pi r^2 + 2\pi r h = 2\pi \cdot (6 \text{ cm})^2 + 2\pi \cdot 6 \text{ cm} \cdot 16 \text{ cm} \\ &= 72\pi \text{ cm}^2 + 192\pi \text{ cm}^2 \\ &= 264\pi \text{ cm}^2 \\ &\approx 829,38 \text{ cm}^2 \end{aligned}$$

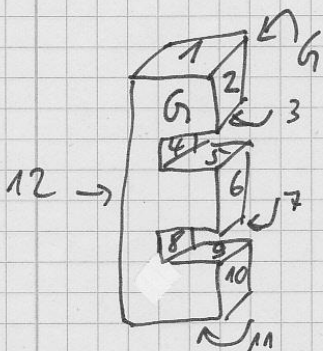
$$\begin{aligned} b) \quad V &= a^3 = (8 \text{ cm})^3 = 512 \text{ cm}^3 \\ O &= 6a^2 = 6 \cdot (8 \text{ cm})^2 = 384 \text{ cm}^2 \end{aligned}$$



$$\begin{aligned} G_1 &= A_1 + A_2 + A_3 + A_4 & A_2 &= A_3 = A_4 \\ G_1 &= A_1 + 3 \cdot A_2 \\ &= 4 \text{ cm} \cdot 13 \text{ cm} + 3 \cdot 6 \text{ cm} \cdot 3 \text{ cm} \\ &= 52 \text{ cm}^2 + 54 \text{ cm}^2 \\ &= 106 \text{ cm}^2 \end{aligned}$$

$$V = G_1 \cdot h = 106 \text{ cm}^2 \cdot 4 \text{ cm} = 424 \text{ cm}^3$$

$$\begin{aligned} O &= 2 \cdot G_1 + M_1 + M_2 + M_3 + M_4 + M_5 + \dots + M_{12} \\ &= 2 \cdot 106 \text{ cm}^2 + 10 \text{ cm} \cdot 4 \text{ cm} + 3 \text{ cm} \cdot 4 \text{ cm} + \\ &\quad 6 \text{ cm} \cdot 4 \text{ cm} + 7 \text{ cm} \cdot 4 \text{ cm} + 6 \text{ cm} \cdot 4 \text{ cm} \\ &\quad + 3 \text{ cm} \cdot 4 \text{ cm} + 6 \text{ cm} \cdot 4 \text{ cm} + 7 \text{ cm} \cdot 4 \text{ cm} + \\ &\quad 6 \text{ cm} \cdot 4 \text{ cm} + 3 \text{ cm} \cdot 4 \text{ cm} + 10 \text{ cm} \cdot 4 \text{ cm} \\ &\quad + 13 \text{ cm} \cdot 4 \text{ cm} \\ &= 492 \text{ cm}^2 \end{aligned}$$



$$d) \quad G = \frac{1}{2} \cdot 4 \text{ cm} \cdot 3 \text{ cm} \quad (\text{rechw. Dreieck!}) \\ = 6 \text{ cm}^2$$

$$V = G \cdot h = 6 \text{ cm}^2 \cdot 8 \text{ cm} = 48 \text{ cm}^3$$

$$O = 2 \cdot G + M \\ = 12 \text{ cm}^2 + 3 \text{ cm} \cdot 8 \text{ cm} + 4 \text{ cm} \cdot 8 \text{ cm} + 5 \text{ cm} \cdot 8 \text{ cm} \\ = 108 \text{ cm}^2$$

$$e) \quad V = \frac{4}{3} \pi r^3 = \frac{4}{3} \cdot \pi \cdot (9 \text{ cm})^3 \approx 3053,63 \text{ cm}^3$$

$$O = 4 \pi r^2 = 4 \pi \cdot (9 \text{ cm})^2 \approx 1017,88 \text{ cm}^2$$

$$f) \quad V = 12 \text{ cm} \cdot 5 \text{ cm} \cdot 4 \text{ cm} = 240 \text{ cm}^3$$

$$O = 2 \cdot 12 \text{ cm} \cdot 5 \text{ cm} + 2 \cdot 5 \text{ cm} \cdot 4 \text{ cm} + 2 \cdot 12 \text{ cm} \cdot 4 \text{ cm} \\ = 256 \text{ cm}^2$$

$$g) \quad V = \frac{1}{2} \cdot V_{\text{Kugel}} = \frac{1}{2} \cdot \frac{4}{3} \cdot \pi \cdot (6 \text{ cm})^3 \approx 452,39 \text{ cm}^3$$

$$O = \frac{1}{2} \cdot O_{\text{Kugel}} + A_{\text{unten}} = \frac{1}{2} \cdot 4 \pi \cdot (6 \text{ cm})^2 + \pi \cdot (6 \text{ cm})^2 \\ = 2 \pi (6 \text{ cm})^2 + \pi (6 \text{ cm})^2 \\ = 3 \pi (6 \text{ cm})^2 \\ \approx 339,29 \text{ cm}^2$$



$$2) a) V = a^3 = (7 \text{ cm})^3 = 343 \text{ cm}^3$$

$$O = 6a^2 = 6 \cdot (7 \text{ cm})^2 = 6 \cdot 49 \text{ cm}^2 = 294 \text{ cm}^2$$

$$b) V = a^3$$
$$1000 \text{ cm}^3 = a^3 \quad | \sqrt[3]{\quad}$$
$$10 \text{ cm} = a$$

$$O = 6a^2 = 6 \cdot (10 \text{ cm})^2 = 600 \text{ cm}^2$$

$$c) O = 6a^2$$
$$900 \text{ cm}^2 = 6 \cdot a^2 \quad | :6$$
$$150 \text{ cm}^2 = a^2 \quad | \sqrt{\quad}$$
$$12,25 \text{ cm} = a$$

$$V = a^3 = (12,25 \text{ cm})^3 = 1838,27 \text{ cm}^3$$

genauer:

$$(\sqrt{150})^3 \approx 1837,12 \text{ cm}^3$$

$$3) a) V = \frac{4}{3} \pi r^3 = \frac{4}{3} \cdot \pi \cdot (12 \text{ cm})^3 \approx 7238,23 \text{ cm}^3$$

$$O = 4 \pi r^2 = 4 \pi \cdot (12 \text{ cm})^2 \approx 1809,56 \text{ cm}^2$$

$$b) V = \frac{4}{3} \pi r^3$$
$$1000 \text{ cm}^3 = \frac{4}{3} \pi r^3 \quad | \cdot \frac{3}{4}$$
$$750 \text{ cm}^3 = \pi r^3 \quad | : \pi$$
$$\frac{750}{\pi} \text{ cm}^3 = r^3 \quad | \sqrt[3]{\quad}$$
$$6,2 \text{ cm} = r$$

$$O = 4 \pi r^2 = 4 \pi \cdot (6,2 \text{ cm})^2 = 483,05 \text{ cm}^2$$

$$\begin{aligned}
 c) \quad 0 &= 4\pi r^2 \\
 800 &= 4\pi r^2 \quad | :4 \\
 200 &= \pi r^2 \quad | :\pi \\
 \frac{200}{\pi} &= r^2 \quad | \sqrt{\quad} \\
 7,98 \text{ cm} &\approx r
 \end{aligned}$$

$$V = \frac{4}{3}\pi \cdot (7,98 \text{ cm})^3 \approx 2128,62 \text{ cm}^3$$

$$\begin{aligned}
 4) a) \quad V &= \pi r^2 h = \pi \cdot (6 \text{ cm})^2 \cdot 15 \text{ cm} \\
 &\approx 1696,46 \text{ cm}^3
 \end{aligned}$$

$$\begin{aligned}
 0 &= 2\pi r^2 + 2\pi r h \\
 &= 2\pi \cdot (6 \text{ cm})^2 + 2\pi \cdot 6 \text{ cm} \cdot 15 \text{ cm} \\
 &= 791,68 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 b) \quad V &= \pi r^2 h \\
 1000 \text{ cm}^3 &= \pi \cdot (6 \text{ cm})^2 \cdot h \\
 1000 \text{ cm}^3 &= \pi \cdot 36 \text{ cm}^2 \cdot h \quad | :\pi \\
 \frac{1000}{\pi} \text{ cm}^3 &= 36 \text{ cm}^2 \cdot h \quad | :36 \text{ cm}^2 \\
 8,84 \text{ cm} &\approx h
 \end{aligned}$$

$$\begin{aligned}
 0 &= 2\pi \cdot (6 \text{ cm})^2 + 2\pi \cdot 6 \text{ cm} \cdot 8,84 \text{ cm} \\
 &\approx 559,45 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 c) \quad 0 &= 2\pi r^2 + 2\pi r h \\
 600 \text{ cm}^2 &= 2\pi \cdot (6 \text{ cm})^2 + 2\pi \cdot 6 \text{ cm} \cdot h \quad | - 2\pi \cdot (6 \text{ cm})^2 \\
 373,8053 \text{ cm}^2 &= 2\pi \cdot 6 \text{ cm} \cdot h \\
 373,8053 \text{ cm}^2 &= 12\pi \text{ cm} \cdot h \quad | :12\pi \text{ cm} \\
 9,92 \text{ cm} &\approx h
 \end{aligned}$$

$$V = \pi \cdot (6 \text{ cm})^2 \cdot 9,92 \text{ cm} = 1121,93 \text{ cm}^3$$

$$d) V = \pi r^2 h$$

$$500 \text{ cm}^3 = \pi r^2 \cdot 8 \text{ cm} \quad | : 8 \text{ cm}$$

$$62,5 \text{ cm}^2 = \pi r^2 \quad | : \pi$$

$$\frac{62,5}{\pi} \text{ cm}^2 = r^2 \quad | \sqrt{\quad}$$

$$4,46 \text{ cm} \approx r$$

$$O = 2\pi \cdot (4,46 \text{ cm})^2 + 2\pi \cdot 4,46 \text{ cm} \cdot 8 \text{ cm} \\ \approx 349,17 \text{ cm}^2$$

$$5) a) V = \pi r^2 h = \pi \cdot (6 \text{ cm})^2 \cdot 6 \text{ cm} \approx 678,58 \text{ cm}^3$$

$$M = 2\pi r h = 2\pi \cdot 6 \text{ cm} \cdot 6 \text{ cm} \approx 226,19 \text{ cm}^2$$

$$b) V = \pi r^2 h$$

$$400 \text{ cm}^3 = \pi \cdot (6 \text{ cm})^2 \cdot h$$

$$400 \text{ cm}^3 = \pi \cdot 36 \text{ cm}^2 \cdot h \quad | : 36\pi \text{ cm}^2$$

$$\frac{400}{36\pi} \text{ cm} = h$$

$$3,54 \text{ cm} \approx h$$

$$M = 2\pi r h = 2\pi \cdot 6 \text{ cm} \cdot 3,54 \text{ cm} \approx 133,45 \text{ cm}^2$$

$$c) V = \pi r^2 h$$

$$400 \text{ cm}^3 = \pi r^2 \cdot 6 \text{ cm} \quad | : 6 \text{ cm}$$

$$66,6 \text{ cm}^2 = \pi r^2 \quad | : \pi$$

$$\frac{66,6}{\pi} \text{ cm}^2 = r^2 \quad | \sqrt{\quad}$$

$$4,61 \text{ cm} \approx r$$

$$M = 2\pi r h = 2\pi \cdot 4,61 \text{ cm} \cdot 6 \text{ cm} \\ \approx 173,79 \text{ cm}^2$$

$$d) M = 2\pi r h$$

$$800 \text{ cm}^2 = 2\pi r \cdot 6 \text{ cm} \quad | : 6 \text{ cm}$$

$$133,3 \text{ cm}^2 = 2\pi r \quad | : 2\pi$$

$$\frac{133,3}{2\pi} \text{ cm} = r$$

$$21,22 \text{ cm} \approx r$$

$$V = \pi \cdot (21,22 \text{ cm})^2 \cdot 6 \text{ cm} \approx 8487,74 \text{ cm}^3$$

$$e) V = \pi r^2 h$$

$$100 = \pi r^2 h$$

$$100 = \pi r \cdot r \cdot h$$

$$100 = \pi r h \cdot r$$

$$M = 2\pi r h$$

$$60 = 2\pi r h \quad | : 2$$

$$30 = \pi r h$$

$$100 = 30 \cdot r \quad | : 30$$

$$3,3 \text{ cm} \approx r$$

$$30 = \pi \cdot 3,3 \cdot h \quad | : 3,3$$

$$9 = \pi \cdot h \quad | : \pi$$

$$2,86 \text{ cm} \approx h$$

6) a)

$$G = \frac{1}{2} \cdot (10 \text{ cm} + 4 \text{ cm}) \cdot 4 \text{ cm}$$
$$= 28 \text{ cm}^2$$

$$V = G \cdot h$$
$$= 28 \text{ cm}^2 \cdot 7 \text{ cm}$$
$$= 196 \text{ cm}^3$$

$$O = 2G + M$$
$$= 2 \cdot 28 \text{ cm}^2 + (10 \text{ cm} + 5 \text{ cm} + 4 \text{ cm} + 5 \text{ cm}) \cdot 7 \text{ cm}$$
$$= 224 \text{ cm}^2$$

$$b) G = \frac{1}{2} \cdot 9 \text{ cm} \cdot 6 \text{ cm} = 27 \text{ cm}^2$$

$$V = G \cdot h = 27 \text{ cm}^2 \cdot 11 \text{ cm} = 297 \text{ cm}^3$$

$$O = 2 \cdot G + M = 2 \cdot 27 \text{ cm}^2 + (3,6^{\text{cm}} + 3,6^{\text{cm}} + 7,6 \text{ cm} + 7,6 \text{ cm}) \cdot 11$$
$$= 300,4 \text{ cm}^2$$