

1.

① Ber. $V_{\text{Würfel}}$

$$V = a^3$$

$$V = 1000 \text{ cm}^3$$

② Ber. r

$$V = \frac{4}{3} \pi \cdot r^3$$

$$1000 = \frac{4}{3} \cdot \pi \cdot r^3$$

$$r = \underline{\underline{6,2 \text{ cm}}}$$

2.

① Ber. $O_{\text{Würfel}}$

$$O = 6 \cdot a^2$$

$$O = 600 \text{ cm}^2$$

② Ber. r

$$O = 4 \pi \cdot r^2$$

$$600 = 4 \pi \cdot r^2$$

$$r = \underline{\underline{6,91 \text{ cm}}}$$

3.

① Ber. V_{Kugel}

$$V = \frac{4}{3} \cdot \pi \cdot r^3$$

$$V = 4188,79 \text{ cm}^3$$

② Ber. a

$$V = a^3$$

$$4188,79 = a^3$$

$$a = \underline{\underline{16,12 \text{ cm}}}$$

4.

① Ber. O_{Kugel}

$$O = 4 \pi \cdot r^2$$

$$O = 1256,64 \text{ cm}^2$$

② Ber. a

$$O = 6 \cdot a^2$$

$$1256,64 = 6 \cdot a^2$$

$$a = \underline{\underline{14,47 \text{ cm}}}$$

5.

① Ber. h

$$M = 2 \pi \cdot r \cdot h$$

$$60 \pi = 2 \pi \cdot 5 \cdot h$$

$$h = \underline{\underline{6 \text{ cm}}}$$

② Ber. V_{Zylinder}

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

$$V = \pi \cdot 5^2 \cdot 6$$

$$V = 150 \pi$$

$$(V = 471,24 \text{ cm}^3)$$

③ Ber. r_{Kugel}

$$V = \frac{4}{3} \cdot \pi \cdot r^3$$

$$150 \pi = \frac{4}{3} \cdot \pi \cdot r^3$$

$$r = \underline{\underline{4,83 \text{ cm}}}$$

6.

① Ber. V_{Kugel}

$$V = \frac{4}{3} \cdot \pi \cdot r^3$$

$$V = 113097,34 \text{ cm}^3$$

② Ber. h

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

$$h = \frac{113097,34}{\pi \cdot 20^2}$$

$$h = \underline{\underline{90 \text{ cm}}}$$

7.

a) ① Ber. O_Z

$$O = 2 \cdot \pi \cdot r^2 + 2 \pi \cdot r \cdot h$$

$$O = 150 \pi = 471,24 \text{ cm}^2$$

② Ber. r_{Kugel}

$$\frac{1}{2} \cdot O_Z = 4 \pi \cdot r^2$$

$$r = \sqrt{\frac{75 \pi}{4 \cdot \pi}}$$

$$r = \underline{\underline{4,33 \text{ cm}}}$$

b) ① Ber. V_Z

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

$$V = 250 \pi$$

$$V = 785,4 \text{ cm}^3$$

② Ber. r_{Kugel}

$$2 \cdot V_Z = \frac{4}{3} \pi \cdot r^3$$

$$r = \sqrt[3]{\frac{500 \pi}{\frac{4}{3} \cdot \pi}}$$

$$r = \underline{\underline{7,21 \text{ cm}}}$$

c) ① Ber. O_Z

$$\text{siehe a)} \rightarrow O_Z = 150 \pi$$

$$O_Z = 471,24 \text{ cm}^2$$

② Ber. $r_{\text{Halbkugel}}$

$$O_Z = 3 \pi \cdot r^2$$

$$r = \sqrt{\frac{150 \pi}{3 \pi}}$$

$$r = \underline{\underline{7,07 \text{ cm}}}$$

8.

① Ber. $V_{\text{Halbkugel}}$

$$V = \frac{1}{2} \cdot \frac{4}{3} \cdot \pi \cdot r_2^3$$

$$V = 261,8 \text{ cm}^3$$

② Ber. r_2

$$V_{\text{HK}} = \frac{4}{3} \cdot \pi \cdot r_2^3$$

$$r_2 = 3,97 \text{ cm}$$

9.

① Ber. r

$$V = \frac{4}{3} \pi \cdot r^3$$

$$1000 = \frac{4}{3} \pi \cdot r^3$$

$$r = 6,2 \text{ cm}$$

② Ber. O_k

$$O = 4\pi \cdot r^2$$

$$O = 483,05 \text{ cm}^2$$

③ Ber. r_{HK}

$$O_k = 3\pi \cdot r_{\text{HK}}^2$$

$$r_{\text{HK}} = 7,16 \text{ cm}$$

10.

① Ber. V_k

$$V = \frac{1}{4} \cdot \frac{4}{3} \pi \cdot 0,5^3$$

$$V = 0,13 \text{ m}^3$$

② Ber. h_z

$$V_k = \pi \cdot 0,5^2 \cdot h$$

$$h = 0,166 \text{ m}$$

11.

① Ber. r

$$O_z = O_{\text{HK}}$$

$$2 \cdot \pi \cdot r^2 + 2\pi \cdot r \cdot 3 = 3\pi \cdot r^2$$

$$6\pi \cdot r = \pi \cdot r^2$$

$$r = 6 \text{ cm}$$

② Ber. V_z

$$V = \pi \cdot 6^2 \cdot 3$$

$$V = 108\pi$$

$$V = 339,29 \text{ cm}^3$$

③ Ber. V_{HK}

$$V = \frac{1}{2} \cdot \frac{4}{3} \cdot \pi \cdot 6^3$$

$$V = 144\pi$$

$$V = 452,39 \text{ cm}^3$$

12.

① Ber. h_z

$$2 \cdot \pi \cdot 3^2 + 2 \cdot \pi \cdot 3 \cdot h = 4\pi \cdot 3^2$$

$$18\pi + 6\pi \cdot h = 36\pi$$

$$6\pi \cdot h = 18\pi$$

$$h = 3 \text{ cm}$$