

S. 163 A14 mit $r_z = \frac{1}{2}r$; $r_k = \frac{1}{2}r$

28.5.

a) Volumen Kugel $V_k = \frac{4}{3}\pi r^3$

Zylinder $V_z = \pi r_z^2 \cdot h_z = \pi \left(\frac{1}{2}r\right)^2 \cdot h_z = \frac{1}{4}\pi r^2 h_z$

Kegel $V_\Delta = \frac{1}{3}\pi r_k^2 \cdot h_\Delta = \frac{1}{3}\pi \left(\frac{1}{2}r\right)^2 \cdot h_\Delta = \frac{1}{12}\pi r^2 h_\Delta$

$$V_k = V_z$$

$$\frac{4}{3}\pi r^3 = \frac{1}{4}\pi r^2 \cdot h_z \quad | : \pi r^2 \cdot 4$$

$$\frac{16}{3} \cdot r = h_z$$

$$V_k = V_\Delta$$

$$\frac{4}{3}\pi r^3 = \frac{1}{12}\pi r^2 \cdot h_\Delta \quad | : \frac{1}{12} \pi r^2$$

$$16 \cdot r = h_\Delta$$

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b) Oberfläche Kugel $O_k = 4\pi r^2$

$$\begin{aligned}\text{Zylinder } O_z &= 2G + M = 2\pi r_z^2 + 2\pi r_z h_z \\ &= 2\pi \left(\frac{1}{2}r\right)^2 + 2\pi \cdot \frac{1}{2}r \cdot h_z \\ &= \frac{1}{2}\pi r^2 + \pi r h_z\end{aligned}$$

$$O_k = O_z$$

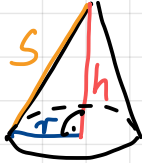
$$4\pi r^2 = \frac{1}{2}\pi r^2 + \pi r h_z \quad | - \frac{1}{2}\pi r^2$$

$$\frac{7}{2}\pi r^2 = \pi r h_z \quad | : \pi : r$$

$$\underline{\underline{\frac{7}{2}r = h_z}}$$

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b) Oberfläche Kugel $O_k = 4\pi r^2$



Kegel $O_A = G + M = \pi r_{ke}^2 + r_{ke} \cdot s \cdot \pi$
 $= \pi \left(\frac{1}{2}r\right)^2 + \frac{1}{2}r s \pi = \frac{1}{4}\pi r^2 + \frac{1}{2}r s \pi$

mit $s = \sqrt{h^2 + r_{ke}^2} = \sqrt{h^2 + \frac{1}{4}r^2}$

$$O_k = O_A$$

$$4\pi r^2 = \frac{1}{4}\pi r^2 + \frac{1}{2}r \pi \cdot \sqrt{h^2 + \frac{1}{4}r^2} \quad | - \frac{1}{4}\pi r^2$$

$$\frac{15}{4}\pi r^2 = \frac{1}{2}r \pi \cdot \sqrt{h^2 + \frac{1}{4}r^2} \quad | : r \quad : \pi \cdot 2$$

$$\frac{15}{2}r = \sqrt{h^2 + \frac{1}{4}r^2} \quad | ()^2$$

$$\frac{225}{4}r^2 = h^2 + \frac{1}{4}r^2 \quad | - \frac{1}{4}r^2$$

$$\frac{224}{4}r^2 = h^2$$

$$56r^2 = h^2$$

$$|\sqrt{\quad}$$

$$\sqrt{56} \cdot r = h$$