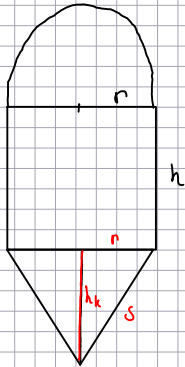


E7

Donnerstag, 10. Juni 2010  
20:12BRP Mathematik  
Mag. Kurt Söser  
2009/10

$$\text{NB: } O = 2r\pi \cdot h + \frac{2 \cdot 4r^2\pi}{2} + r\pi s$$

$$\text{NB: } V = r^2\pi \cdot h + \frac{2}{3} \frac{4r^3\pi}{3} + \frac{r^2\pi \cdot h_k}{3}$$

$$V = r^2\pi \cdot h + \frac{2r^3\pi}{3} + \frac{r^2\pi \cdot 15}{3 \cdot 8}$$

$$V = r^2\pi \cdot h + \frac{16r^3\pi}{24} + \frac{15r^3\pi}{24}$$

$$V = \frac{24r^2\pi \cdot h}{24} + \frac{31r^3\pi}{24} \quad | \cdot 24$$

$$24 \cdot 333 = 24r^2\pi \cdot h + 31r^3\pi$$

$$24 \cdot 333 - 31r^3 = 24r^2 \cdot h \quad | : 24r^2$$

$$\frac{24 \cdot 333}{24r^2} - \frac{31r^3}{24r^2} = h$$

$$\frac{333}{r^2} - \frac{31r}{24} = \left( \frac{h}{333} - \frac{24hr}{r^2} \right) + 2r^2\pi + r\pi \cdot \frac{17}{8}r$$

$$\Rightarrow O = \frac{666}{r^2} - \frac{62r}{24} + 2r^2 + \frac{17}{8}r^2$$

$$O = \frac{666}{r} - \frac{62}{24}r^2 + 2r^2 + \frac{17}{8}r^2$$

$$O = \frac{666}{r} - \frac{62}{24}r^2 + \frac{48r^2}{24} + \frac{54}{24}r^2$$

$$O = \frac{666}{r} + \frac{37}{24}r^2$$

$$O' = -\frac{666}{r^2} + \frac{37}{12} \cdot 2r = 0$$

$$\frac{37}{12}r = \frac{666}{r^2}$$

$$r^3 = \frac{666 \cdot 12}{37} = 216$$

$$r = 6 \text{ cm} \quad \Rightarrow h = \frac{333}{6^2} - \frac{31}{24} \cdot 6$$

$$h = 1,5 \text{ cm}$$

$$\Rightarrow h_k = \frac{15}{8} \cdot 6^2 = 7,5 \text{ cm}$$