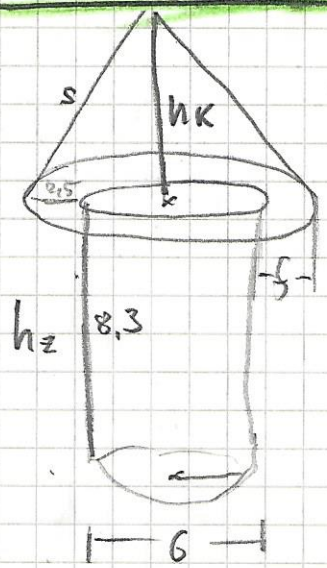
S. 205 Nr. 12



$V_z = V_K$ ges: O_{ges}

$r_z = 3\,cm$

$r_K = 5{,}5\,cm$

$O_{ges} = G_z + M_z + [G_{Ke} - G_z] + M_{Ke}$

$G_z = \pi \cdot r_z^2 = \pi \cdot 3^2$ $\quad G_z = 28{,}27$

$M_z = 2\pi \cdot r_z \cdot h = 2\pi \cdot 3 \cdot 8{,}3$ $\quad M_z = 156{,}45$

$G_{Ke} = \pi \cdot r_{Ke}^2 = \pi \cdot 5{,}5^2$ $\quad G_{Ke} = 95{,}03$

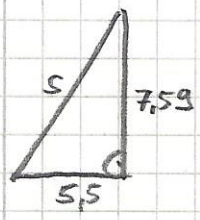
$M_{Ke} = \pi \cdot r_{Ke} \cdot s = \pi \cdot r_{Ke} \cdot s$

$V_{zyl} = \pi r_z^2 \cdot h$

$\pi \cdot 3^2 \cdot 8{,}5 \Rightarrow V_{zy} = 240{,}33\,cm^2$

$V_{Ke} = \frac{1}{3}\pi r_K^2 \cdot h_K$

$240{,}33 = \frac{1}{3} \cdot \pi \cdot 5{,}5^2 \cdot h_{Ke} \Rightarrow \underline{h_{Ke} = 7{,}59\,cm}$



Berechn. s:

$s = \sqrt{7{,}59^2 + 5{,}5^2} \Rightarrow s = \underline{9{,}3\,cm}$

$M_{Ke} = \pi \cdot 5{,}5 \cdot 9{,}3 \Rightarrow M_{Ke} = 160{,}69\,cm^2$

$O_{ges} = 28{,}27 + 156{,}45 + [95{,}03 - 28{,}27] + 160{,}69$

$O_{ges} = 412{,}17\,cm^2$