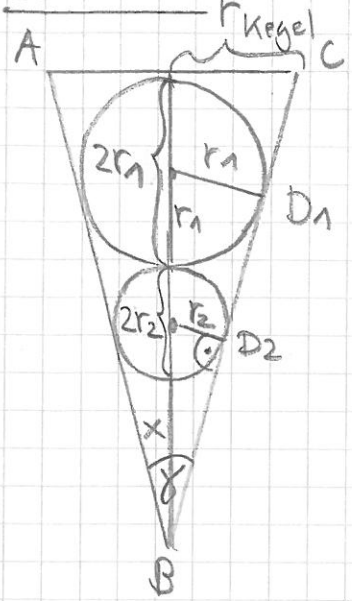
S. 128 / 5

Skizze:



geg: $r_1 = 5\,cm$; $r_2 = 3\,cm$

a) $V_{K1} = \frac{4}{3} \cdot (5\,cm)^3 \pi = 523{,}60\,cm^3$

$V_{K2} = \frac{4}{3} \cdot (3\,cm)^3 \pi = 113{,}10\,cm^3$

$V_{ges} = 523{,}60\,cm^3 + 113{,}10\,cm^3$

$= 636{,}7\,cm^3$

b) ges: V_{Kegel}

$V_{Kegel} = \frac{1}{3} \cdot r_{Kegel}^2 \cdot \pi \cdot h_{Kegel}$

$h_{Kegel} = 2r_1 + 2r_2 + x$

$\frac{r_2}{r_1} = \frac{x + r_2}{x + 2r_2 + r_1}$

$\frac{3}{5} = \frac{x + 3}{x + 6 + 5}$

$3(x + 11) = 5(x + 3)$

$3x + 33 = 5x + 15$

$18 = 2x$

$x = 9$

$h_{Kegel} = 2 \cdot 5\,cm + 2 \cdot 3\,cm + 9\,cm$

$h_{Kegel} = 25\,cm$

$\triangle BD_2M_2$:

$\sin\frac{\gamma}{2} = \frac{r_2}{x + r_2}$

$\sin\frac{\gamma}{2} = \frac{3\,cm}{12\,cm}$

$\Rightarrow \frac{\gamma}{2} = 14{,}48°$

$\tan\frac{\gamma}{2} = \frac{r_{Kegel}}{h_{Kegel}}$

$r_{Kegel} = 25\,cm \cdot \tan 14{,}48°$

$r_{Kegel} = 6{,}46\,cm$

$V_{Kegel} = \frac{1}{3} \cdot (6{,}46\,cm)^2 \pi \cdot 25\,cm = 1092{,}53\,cm^3$

c) $\frac{1092{,}53\,cm^3 - 636{,}7\,cm^3}{1092{,}53\,cm^3} \cdot 100\,\% = 41{,}72\,\%$