1) Geg.: Drehkegel

G = 36,32cm², V= 99,27cm³,
Dichte(rho) ρ= 7,86g/cm³(Eisen)

Ges.:
a) Mantelfläche (M)
b) Höhe (h_k)
c) Mantellinie (s)
d) Oberfläche (O)
e) Masse (m) in Gramm
f) Umfang der Grundfläche (U_G) - oder u

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2) Geg.: Drehkegel:

H=12 cm, V=211,14cm³, m=1660,35g

Ges.:
a) Mantelfläche (M)
b) Radius der Grundfläche (r)
c) Mantellinie (s)
d) Oberfläche (O)
e) Dichte ρ

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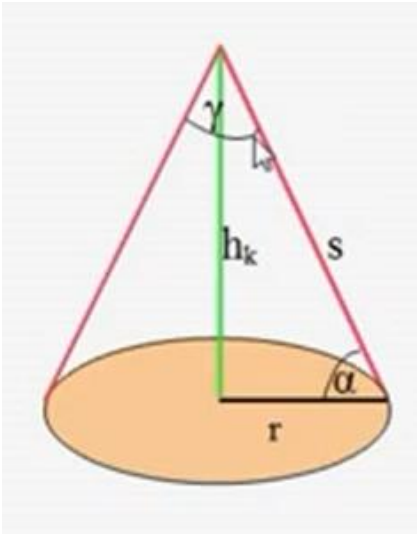
3) Geg.: Drehkegel: (nur für V-LmMatura)

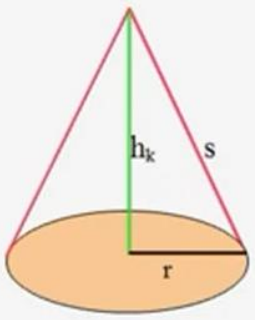
h=9,6 cm, s=10,4cm,



Ges.:
a) Radius der Grundfläche (r)
b) Grundfläche (G)
c) Mantelfläche (M)
d) Oberfläche (O)
e) Winkel α (Berechnung mit sin ?)
f) Winkel γ (Gamma)

Lösungen Seite 2 und 3

Lösung zu 1:



① Geg.: Kegel: G = 36,32 cm²; V = 99,27 cm³
ρ = 7,86 g/cm³ (Eisen)

Ges.: M, h_k, s, O, m, u

$\pi * r^2 = G \mid : \pi \mid \sqrt{\ }$

$r = \sqrt{\frac{G}{\pi}} = \sqrt{\frac{36{,}32}{\pi}} = 3{,}4 \text{ cm}$

$\frac{G * h_k}{3} = V \mid *3 \mid : G$

$h_k = \frac{3 * V}{G} = \frac{3 * 99{,}27}{36{,}32} = 8{,}2 \text{ cm}$

Formeln:

$G = \pi * r^2$

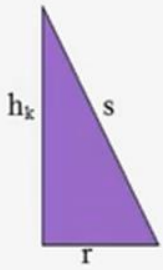
$u = 2 * \pi * r$

$V = \frac{G * h_k}{3}$

$M = \pi * r * s$

$O = G + M$

$m = \rho * V$



$s^2 = h_k^2 + r^2 \mid \sqrt{\ }$

$s = \sqrt{h_k^2 + r^2} = \sqrt{8{,}2^2 + 3{,}4^2} = 8{,}88 \text{ cm}$

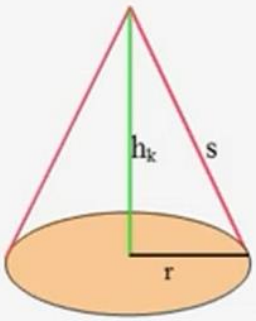
$M = \pi * r * s = \pi * 3{,}4 * 8{,}88 = 94{,}85 \text{ cm}^2$

$O = G + M = 36{,}32 + 94{,}85 = 131{,}17 \text{ cm}^2$

$m = \rho * V = 7{,}86 \text{ g/cm}^3 * 99{,}27 \text{ cm}^3 = 780{,}26 \text{ g}$

$u = 2 * \pi * r = 2 * \pi * 3{,}4 = 21{,}36 \text{ cm}$

Lösung zu 2:



② Geg.: Kegel: h_k = 12 cm; V = 211,24 cm³
m = 1660,35 g

Ges.: M, r, s, O, ρ

$\frac{G * h_k}{3} = V \mid *3 \mid : h_k$

$G = \frac{3 * V}{h_k} = \frac{3 * 211{,}24}{12} = 52{,}81 \text{ cm}^2$

$\pi * r^2 = G \mid : \pi \mid \sqrt{\ }$

$r = \sqrt{\frac{G}{\pi}} = \sqrt{\frac{52{,}81}{\pi}} = 4{,}1 \text{ cm}$

$s^2 = h_k^2 + r^2 \mid \sqrt{\ }$

$s = \sqrt{h_k^2 + r^2} = \sqrt{12^2 + 4{,}1^2} = 12{,}68 \text{ cm}$

$M = \pi * r * s = \pi * 4{,}1 * 12{,}68 = 163{,}33 \text{ cm}^2$

$O = G + M = 52{,}81 + 163{,}33 = 216{,}14 \text{ cm}^2$

$\rho * V = m \mid : V$

$\rho = \frac{m}{V} = \frac{1660{,}35 \text{ g}}{211{,}24 \text{ cm}^3} = 7{,}86 \text{ g/cm}^3$

Formeln:

$G = \pi * r^2$

$u = 2 * \pi * r$

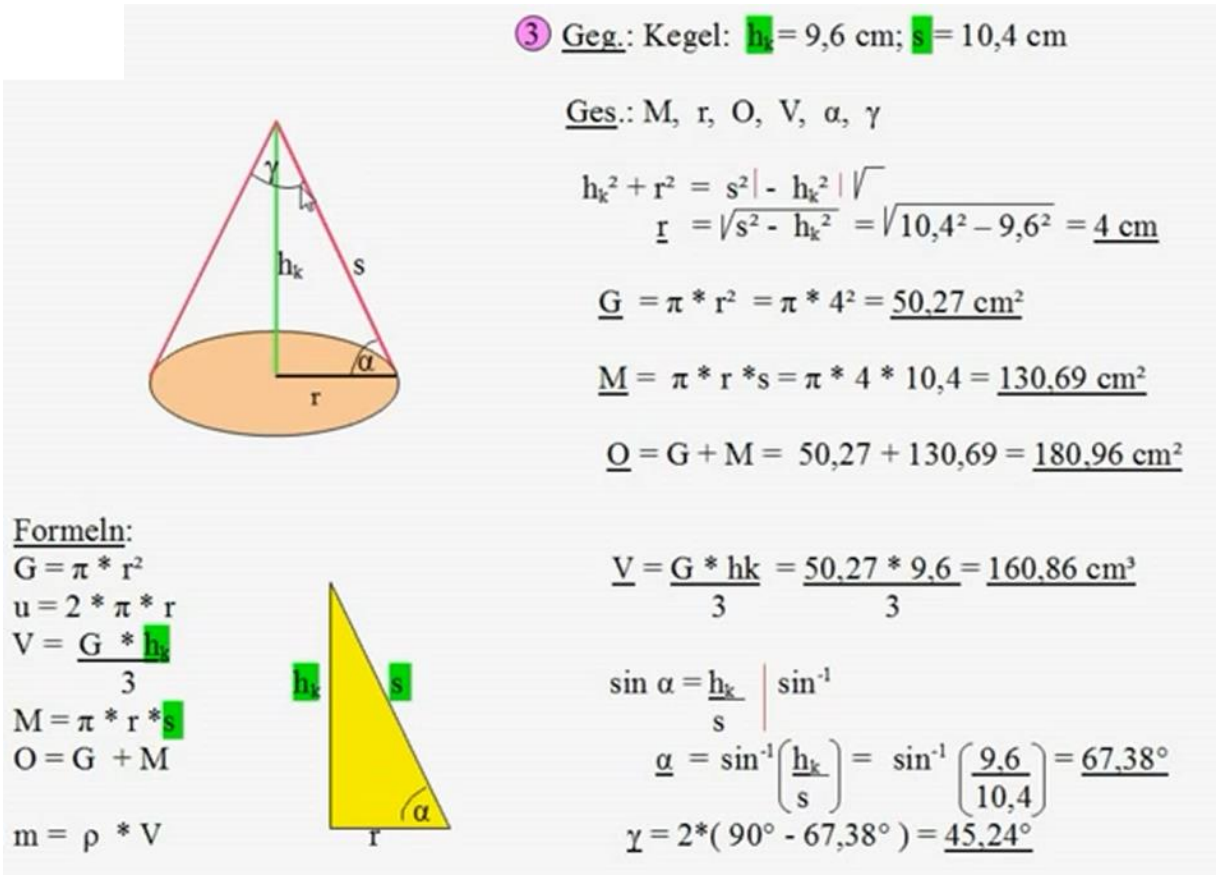
$V = \frac{G * h_k}{3}$

$M = \pi * r * s$

$O = G + M$

$m = \rho * V$

Lösung zu 3: (Winkelberechnungen nur für V-LmMatura)



Notizen: