1. a.) $h_D = \sqrt{5^2 + 2^2} = \underline{\sqrt{29}\ m}$ 1

$M = 4 \cdot \frac{\sqrt{29}\ m \cdot 4m}{2} = \underline{8 \cdot \sqrt{29}\ m^2}$ 1

(4)

b.) $s = \sqrt{\sqrt{29}^2 + 2^2} = \underline{\sqrt{33}\ m}$ 1

$k = 4 \cdot 4m + 4 \cdot \sqrt{33}\ m = \underline{(16 + 4 \cdot \sqrt{33})\ m}$ 1

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2. $V = \frac{1}{3} \cdot (4m)^2 \cdot 5m = \underline{\frac{80}{3}\ m^3}$ 1

$\rightsquigarrow \frac{1}{3} \cdot s^2 \cdot 8m = \frac{80}{3}\ m^3 \quad | \cdot 3$

$s^2 \cdot 8 = 80 \quad | : 8$

(4)

$s^2 = 10 \quad | \sqrt{\ }$

$\underline{s = \sqrt{10}\ m}$ 2

$\rightarrow 4m - \sqrt{10}\ m \mathrel{\widehat{=}} \underline{0{,}84\ m}$ 1

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3. $r = \frac{u}{2 \cdot \pi} = \frac{200\ m}{2 \cdot \pi} = \underline{\frac{200}{\pi}\ m}$ 1

$h = 0{,}4 \cdot r = \frac{4}{10} \cdot \frac{200}{\pi} = \underline{\frac{80}{\pi}\ m}$ 1

(4)

$\rightarrow V = \frac{1}{3} \cdot r^2 \cdot \pi \cdot h = \frac{1}{3} \cdot \left(\frac{200}{\pi}m\right)^2 \cdot \pi \cdot \frac{80}{\pi}m$

$\mathrel{\widehat{=}} \underline{108'075{,}929\ m^3}$ 2

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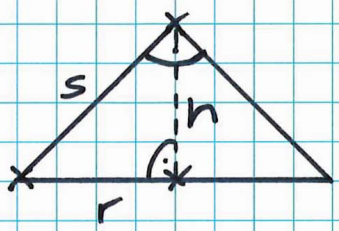
4. $r = h = \frac{50\,cm}{2} = \underline{25\,cm}$ 1

(4) $s = \sqrt{25^2 + 25^2} = \underline{\sqrt{1'250}\,cm}$ 1



$\Rightarrow M = r \cdot s \cdot \pi = 25\,cm \cdot \sqrt{1'250}\,cm \cdot \pi \approx \underline{2'776{,}80\,cm^2}$ 2

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5. $\frac{4{,}5}{3{,}6} = \frac{h}{3{,}2}$ ↷ $\underline{h = 4\,m}$ 1

$\Rightarrow V_{Dach} = \frac{1}{3} \cdot (3{,}6\,m)^2 \cdot \pi \cdot 4{,}5\,m - \frac{1}{3} \cdot (3{,}2\,m)^2 \cdot \pi \cdot 4\,m$

(4) $\approx \underline{18{,}179\,m^3} = \underline{18'179\,dm^3}$ 2

$\Rightarrow m = V_{Dach} \cdot \rho \approx \underline{54'538\,kg}$ 1

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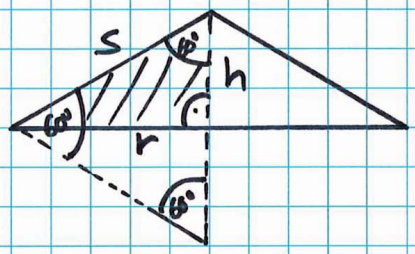
6. $h = 3'200\,m - 2'400\,m = \underline{800\,m}$ 1

$s = 2 \cdot h = \underline{1'600\,m}$ 1

(4) $r = \sqrt{s^2 - h^2}$

$= \sqrt{1'600^2 - 800^2} \approx \underline{1'385{,}6\,m}$ 1



$\Rightarrow u = 2 \cdot r \cdot \pi \approx \underline{8'706{,}2\,m}$ 1

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24 Pkt