PL 8 - Kužel - řešení

1) 

$r = 5\,cm,\ s = 10\,cm,\ v = ?$

$v^2 = s^2 - r^2$

$v^2 = 10^2 - 5^2$

$v = \sqrt{100-25}$

$v = \sqrt{75}$

$v \doteq 8{,}7\,cm$

$2 \cdot r = 2 \cdot 5 = 10\,cm < 11\,cm$

$8{,}7\,cm < 9\,cm$

Kužel se do krabičky vejde.

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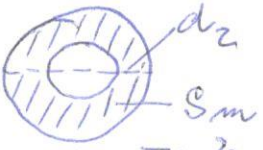
2) 

$d_1 = 28\,cm,\ d_2 = 44\,cm,\ s = 30\,cm$

$r_1 = 14\,cm,\ r_2 = 22\,cm$



$S_{pl} = \pi r s$

$S_{pl} = 3{,}14 \cdot 14 \cdot 30$

$S_{pl} = 1\,318{,}8\,cm^2$

$S_m = S_2 - S_1$

$S_m = 3{,}14 \cdot 22^2 - 3{,}14 \cdot 14^2$

$S_m = 1\,519{,}76 - 615{,}44$

$S_m = 904{,}32\,cm^2$

$S_1 = \pi r_1^2$

$S_2 = \pi r_2^2$

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$S = S_{pl} + S_m$

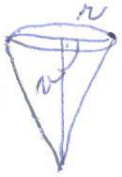
$S = 1\,318{,}8 + 904{,}32$

$S = 2\,223{,}12\,cm^2$ 100%

x 105%

$x = \frac{2\,232{,}12 \cdot 105}{100} = 2\,334{,}276\,cm^2 \doteq 2334\,cm^2$

Bude potřeboval cca $2334\,cm^2$ materiálu.

3) 

$r = 9\,cm,\ r = 5\,cm,\ V = ?\,[cm^3]$

$V = \frac{1}{3}\pi r^2 v$

$V = \frac{1}{3} \cdot 3{,}14 \cdot 5^2 \cdot 9$

$V = 235{,}5\,cm^3$

1 kopeček ... $32\,cm^3$

8 -"- ... x

$x = \frac{32 \cdot 8}{1} = 256\,cm^3$

„přetečení": $256 - 235{,}5 = 20{,}5\,cm^3$

Přes okraj vyteče $20{,}5\,cm^3$ rozkleté zmrzliny.

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4) 

$s = 45\,cm,\ r = 27\,cm,\ v = ?\,[cm],\ V = ?\,[cm^3],\ S_{pl} = ?\,[cm^2]$

$v^2 = s^2 - r^2$

$v^2 = 45^2 - 27^2$

$v = \sqrt{2\,025 - 729}$

$v = \sqrt{1\,296}$

$v = 36\,cm$

a) $V = \frac{1}{3}\pi r^2 v$

$V = \frac{1}{3} \cdot 3{,}14 \cdot 27^2 \cdot 36$

$V = 27\,468{,}72\,cm^3 \doteq$

$\doteq 27{,}5\,dm^3$

b) $S_{pl} = \pi r s$

$S_{pl} = 3{,}14 \cdot 27 \cdot 45$

$S_{pl} = 3\,815{,}1\,cm^2 \doteq$

$\doteq 38\,dm^2$

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Objem sličky je cca $27{,}5\,dm^2$, na polepení sličky se spotřebuje cca $38\,dm^2$ lepenky.

c) $\rho = 0{,}56\,g/cm^3$

$m = \rho \cdot V$

$m = 0{,}56 \cdot 27\,468{,}72 = 15\,382{,}4832\,g \doteq 15{,}4\,kg$

Hmotnost sličky je cca 15,4 kg.