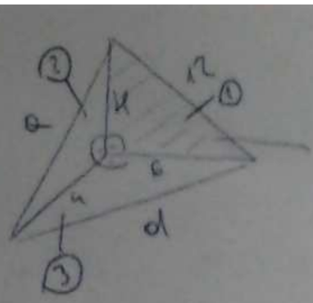
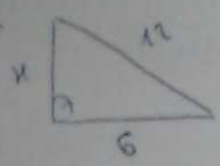
ZAD 138 b



$V = \frac{1}{3} P_{podst} \cdot H$

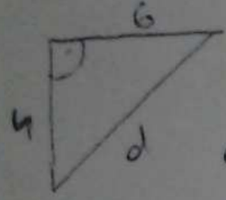


$H^2 = 12^2 - 6^2$

$H^2 = 144 - 36$

$H = \sqrt{108} = 6\sqrt{3}$

PODSTAWA



$P_{podst} = \frac{1}{\cancel{2}} \cdot \cancel{4}^{2} \cdot 6 = 12$

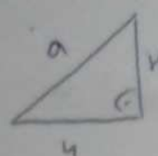
$d^2 = 4^2 + 6^2$

$d^2 = 16 + 36$

$d = \sqrt{52} = 2\sqrt{13}$

$P_{\Delta 1} = \frac{1}{2} \cdot 6 \cdot H = 3 \cdot 6\sqrt{3} = 18\sqrt{3}$

$P_{\Delta 2} = \frac{1}{2} \cdot 4 \cdot H = 2 \cdot 6\sqrt{3} = 12\sqrt{3}$

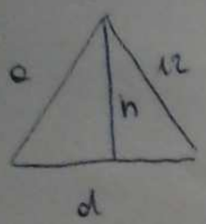


$a^2 = H^2 + 4^2$

$a^2 = 108 + 16$

$a = \sqrt{124} = 2\sqrt{31}$

WZÓR HERONA



$P_{\Delta 3} = \sqrt{s(s-d)(s-a)(s-12)} = \sqrt{(\sqrt{31}+\sqrt{13}+6)(\sqrt{31}+\sqrt{13}+6-2\sqrt{13}) \cdot (\sqrt{31}+\sqrt{13}+6-2\sqrt{31}) \cdot (\sqrt{31}+\sqrt{13}+6-12)} =$

$s = \frac{a+d+12}{2} = \frac{2\sqrt{31}+2\sqrt{13}+12}{2} = \sqrt{31}+\sqrt{13}+6$

$= \sqrt{(\sqrt{31}+\sqrt{13}+6)(\sqrt{31}+6-\sqrt{13})(\sqrt{13}+6-\sqrt{31})(\sqrt{31}+\sqrt{13}-6)} =$

$= \sqrt{(31 + 6\sqrt{31} - \cancel{\sqrt{403}} + \cancel{\sqrt{403}} + \cancel{6\sqrt{13}} - 13 + 6\sqrt{31} + 36 - \cancel{6\sqrt{13}}) \cdot (\cancel{\sqrt{403}} + 13 - \cancel{6\sqrt{13}} + 6\sqrt{31} + \cancel{6\sqrt{13}} - 36 - \cancel{\sqrt{403}} - 31 + 6\sqrt{31})} =$

$= \sqrt{(54 + 12\sqrt{31}) \cdot (12\sqrt{31} - 54)} = \sqrt{\cancel{648\sqrt{31}} - 2916 + 4464 - \cancel{648\sqrt{31}}} =$

$= \sqrt{1548} = 6\sqrt{43}$

OBJĘTOŚĆ OSTROSŁUPA

$V = \frac{1}{3} P_{podst} \cdot H = \frac{1}{\cancel{3}} \cdot \cancel{12}^{4} \cdot 6\sqrt{3} = 24\sqrt{3}$

POLE CAŁKOWITE

$P_{całk} = P_{podst} + P_{\Delta 1} + P_{\Delta 2} + P_{\Delta 3} = 12 + 18\sqrt{3} + 12\sqrt{3} + 6\sqrt{43} =$

$= 12 + 30\sqrt{3} + 6\sqrt{43}$