6) основа △
$a=13$
$b=14$
$c=15$
$\measuredangle(k, ABCD)=45°$
$V=?$

$B=\sqrt{p(p-a)(p-b)(p-c)}$

$p=\frac{a+b+c}{2}=\frac{13+14+15}{2}=21$

$B=\sqrt{21(21-13)(21-14)(21-15)}$

$B=\sqrt{21\cdot 8\cdot 7\cdot 6}=\sqrt{3\cdot 7\cdot 2\cdot 4\cdot 7\cdot 2\cdot 3}$

$B=3\cdot 7\cdot 2\cdot 2=84cm^2$

$B=\frac{14\cdot h_1}{2}$

$84=7h_1$

$h_1=12cm$

$\frac{1}{3}\cdot 12=4cm$

$h=ON=4cm$

$V=\frac{Bh}{3}=\frac{84\cdot 4}{3}$

$V=112cm^3$

8) основа ▭
$B=9cm^2$
агли 30, 60, 90°
$V=?$

$\triangle ADM$ $\cot 30°=\frac{AD}{DM}=\frac{b}{DM}$

$b=DM\cot 30$

$b=DM\cdot\sqrt{3}\ cm$

$\triangle CDM$ $\cot 60=\frac{CD=a}{DM}=\frac{a}{DM}$

$a=DM\cot 60=\frac{DM\sqrt{3}}{3}\ cm$

$B_{ABCD}=ab=9$

$DM\sqrt{3}\cdot DM\frac{\sqrt{3}}{3}=9$

$DM^2=9$

$DM=3cm$

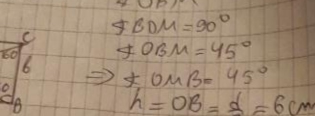
$V=\frac{B\cdot h}{3}$ $h=DM$

$V=\frac{9\cdot 3}{3}$

$V=9cm^3$

Зад 3

основа правоъгълник
$B = 36\sqrt{3}\ cm^2$
$\varphi = 60°$
$\angle(\ell, ABCD) = 45°$
$V = ?$



$S_{\triangle AOB} = S_{\triangle BOC}$

$\frac{b \cdot b \cdot \sin 60}{2} = \frac{a \cdot b}{2}$

$\frac{b^2 \sqrt{3}}{2} = \frac{ab}{2}$

$\sqrt{3}b = a$

$ab = 36\sqrt{3}$

$\sqrt{3}b \cdot b = 36\sqrt{3}$

$b = 6cm$

$a = 6\sqrt{3}cm$

$d^2 = a^2 + b^2$

$d^2 = (6\sqrt{3})^2 + 6^2$

$d^2 = 108 + 36$

$d^2 = 144$

$d = 12cm$

$\frac{d}{2} = 6cm$

$\triangle OBM$

$\angle BOM = 90°$

$\angle OBM = 45°$

$\Rightarrow \angle OMB = 45°$

$h = OB = \frac{d}{2} = 6cm$

$V = \frac{B \cdot h}{3}$

$V = \frac{36\sqrt{3} \cdot 6}{3}$

$V = 72\sqrt{3}\ cm^3$

Зад 5)
основа ромб
$a = 15cm$
$\angle(\ell, ABCD) = 45°$
$V = ?$

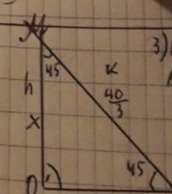
1) $S = \frac{h_a k}{2}$

$400 = \frac{4 \cdot 15 \cdot k}{2}$

$30k = 400$

$k = \frac{400}{30}$

$k = \frac{40}{3}$



2) $x^2 + x^2 = \left(\frac{40}{3}\right)^2$

$2x^2 = \frac{1600}{9}$

$x^2 = \frac{800}{9}$

$MO = h = x = \frac{20\sqrt{2}}{3}$

3) $B = S \cos 45$

$B = \frac{400\sqrt{2}}{2}$

$B = 200\sqrt{2}$

4) $V = \frac{B \cdot h}{3}$

$V = \frac{200\sqrt{2} \cdot 20\sqrt{2}}{3 \cdot 3}$

$V = \frac{8000}{9}$

пир. 102/1

$n=4$

$V=3072cm^3$

$h:b=2:3$

$h=?$

$h=2x \quad b=3x$

$V=\frac{B\cdot h}{3}$

$B=b^2$

$3072=\frac{(3x)^2\cdot 2x}{3}$

$3072=\frac{9x^2\cdot 2x}{3}$

$6x^3=3072$

$x^3=512$

$x^3=8^3$

$x=8cm$

$h=2\cdot 8$

$h=16cm$

зад 2 пир.

осн. рамнокрак

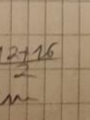
$a=b=12cm$

$c=16cm$

$l=18cm$

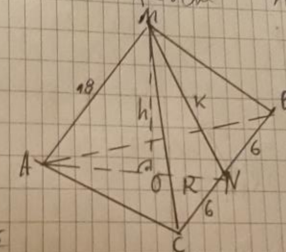
$V=?$

основа ABC



$p=\frac{12+12+16}{2}$

$p=20cm$



$B=\sqrt{p(p-a)(p-b)(p-c)}$

$B=\sqrt{20\cdot(20-12)(20-12)(20-16)}$

$B=\sqrt{20\cdot 8\cdot 8\cdot 4}$

$B=4\cdot 8\cdot\sqrt{5}$

$B=32\sqrt{5}cm^2$

$B=\frac{abc}{4R}$

$32\sqrt{5}=\frac{12\cdot 12\cdot 16}{4R}$

$R=\frac{36}{2\sqrt{5}}=\frac{18\sqrt{5}}{5}cm$

△OMN

$h^2+R^2=18^2$

$h^2=324-\left(\frac{18\sqrt{5}}{5}\right)^2$

$h^2=\frac{324\cdot 5-324}{5}$

$h=\sqrt{\frac{1296}{5}}=\frac{36}{\sqrt{5}}cm$

$V=\frac{B\cdot h}{3}$

$V=32\sqrt{5}\cdot\frac{36}{\sqrt{5}}\cdot\frac{1}{3}$

$V=384cm^2$

4) $n=4$
$S_1 = 360 \, cm^2$
$k = 13 \, cm$
$V = ?$

$B = b^2 = 10^2 = 100 \, cm^2$

$\triangle ONM$
$h^2 = 13^2 - 5^2$

$h^2 = 169 - 25$
$h^2 = 144$
$h = 12 \, cm$

$S_1 = S + B$
$S = \frac{n b k}{2}$ $B = b \cdot b$

$\frac{n b k}{2} + b^2 = 360$

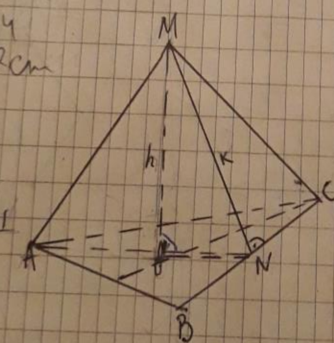
$\frac{4 \cdot b \cdot 13}{2} + b^2 = 360$

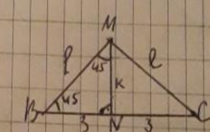
$b^2 + 26 b - 360 = 0$
$D = 169 + 360 = 529$
$\sqrt{D} = \sqrt{529} = 23$
$b_1 = -13 + 23 = 10 \, cm$

$V = \frac{B \cdot h}{3} = \frac{100 \cdot 12}{3}$

$V = 400 \, cm^3$

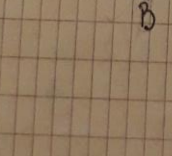
6) $n = 3$
$b = 6$
бочни рб. са ⊥
$V = ?$





$k = 3 \, cm$
$ON = \sqrt{3} \, cm$

$\triangle ONM$
$h^2 = 3^2 - (\sqrt{3})^2$
$h^2 = 9 - 3 = 6$
$h = \sqrt{6} \, cm$



основа $h^2 = 6^2 - 3^2$
$h = \sqrt{27}$
$h = 3\sqrt{3} \, cm$

$\frac{1}{3} h = \sqrt{3} \, cm$
$B = \frac{6 \cdot 3\sqrt{3}}{2}$
$B = 9\sqrt{3} \, cm^2$

$V = \frac{B \cdot h}{3} = \frac{3\sqrt{3} \cdot \sqrt{6}}{3}$

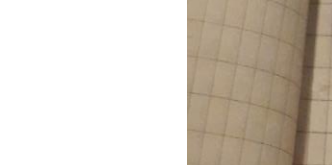
$= \frac{9 \cdot \sqrt{18}}{3} = 3 \cdot 3\sqrt{2}$

$V = 9\sqrt{2} \, cm^2$

9.04.22г

Домашняя работа

№1 Дано:
пирамида
$n=3$
$b=6$см
$l=5$см
S_1 и $V=?$

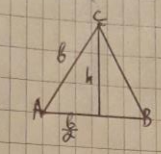


$k^2=5^2-3^2$
$k^2=16$
$k=4$см

$S=\frac{P\cdot k}{2}=\frac{n\cdot b\cdot k}{2}=\frac{3\cdot 6\cdot 4}{2}=36$см^2

$B=\frac{b\cdot h}{2}=\frac{6\cdot 3\sqrt{3}}{2}=9\sqrt{3}$см^2

$S_1=S+B=36+9\sqrt{3}$см^2

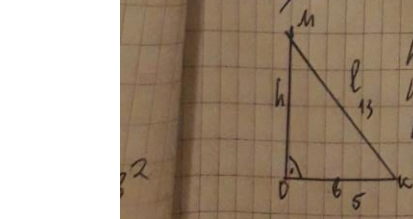


$h^2=6^2-3^2=27$
$h=\sqrt{27}$
$h=3\sqrt{3}$см
$ON=\frac{1}{3}h=\sqrt{3}$см

$\triangle ONM$
$MO^2=k^2-ON^2=4^2-(\sqrt{3})^2=16-3=13$
$MO=\sqrt{13}$

$V=\frac{B\cdot h}{3}=\frac{9\sqrt{3}\cdot\sqrt{13}}{3}=3\sqrt{39}$см^3

№3 Дано
пирамида
$n=6$
$b=5$см
$l=13$см
h, $V=?$



$h^2=l^2-b^2$
$h^2=169-25$
$h=\sqrt{144}$
$h=12$см

$V=\frac{B\cdot h}{3}$

$B=\frac{P\cdot a}{2}=\frac{n\cdot b\cdot a}{2}$

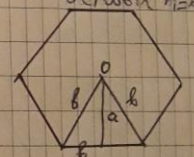
$B=\frac{6\cdot 5\cdot 5\sqrt{3}}{2\cdot 2}$

$B=\frac{75\sqrt{3}}{2}$см^2

$V=\frac{75\sqrt{3}\cdot 12}{3\cdot 2}$

$V=150\sqrt{3}$см^3

основа $n=6$



$a^2=5^2-\left(\frac{5}{2}\right)^2$
$a^2=25-\frac{25}{4}$
$a=\sqrt{\frac{75}{4}}=\frac{5\sqrt{3}}{2}$