

PROBLEME - ARIA TRIUNGHILULUI

14/92 cul.:

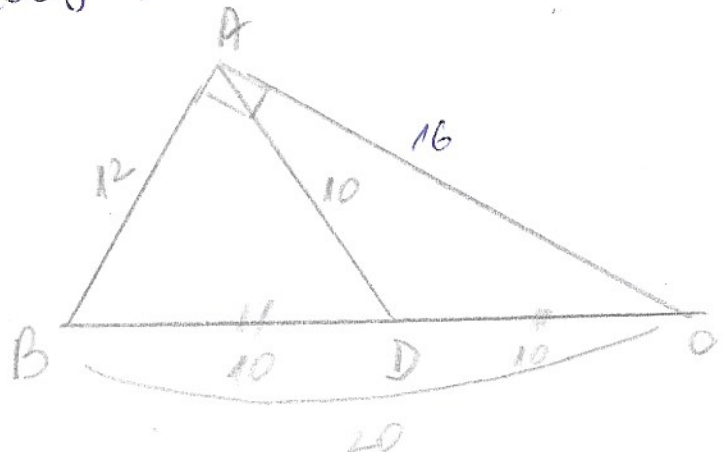
$\Delta ABC$

D - mijl. ipotenuzei [BC]  $\Rightarrow \Delta ABC$  dr. cu  $m(\hat{A}) = 90^\circ$

$AB = 12 \text{ cm}$

$AD = 10 \text{ cm}$

$A, P_{\Delta ABC} = ?$



Dem:

Din  $\Delta ABC$  - dr.  $\left. \begin{array}{l} AD = \text{mediana} \end{array} \right\} \Rightarrow AD = \frac{BC}{2} \Rightarrow BC = 2 \cdot AD = 2 \cdot 10 = 20 \text{ cm}$

$\Rightarrow AC^2 = BC^2 - AB^2$

$AC^2 = 20^2 - 12^2$

$AC^2 = 4^2 \cdot (5^2 - 3^2)$

$AC = \sqrt{4^2 \cdot 4^2} = 4 \cdot 4 = 16 \text{ cm}$

$\Rightarrow P_{\Delta ABC} = 20 + 12 + 16 = 48 \text{ cm}$   
 $A_{\Delta ABC} = \frac{AB \cdot AC}{2} = \frac{12 \cdot 16}{2} = 96 \text{ cm}^2$

15/92

$\Delta ABC$  - dr.

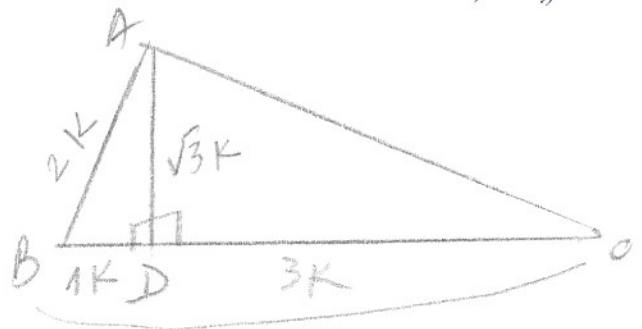
$m(\hat{A}) = 90^\circ$

$\frac{AD}{BD} = \sqrt{3}$

$AD \perp BC$

$D \in [BC]$

$AC = 36\sqrt{6} \text{ cm}$



Dem:

Din  $\frac{AD}{BD} = \sqrt{3} \Rightarrow AD = \sqrt{3} \cdot K$   
 $BD = 1 \cdot K$

-2-

$$\text{In } \triangle ADB, \angle D = 90^\circ \xrightarrow{\text{T.P}} AB^2 = AD^2 + BD^2$$

$$AB^2 = (\sqrt{3}k)^2 + (1k)^2$$

$$AB^2 = 3k^2 + 1k^2$$

$$AB^2 = 4k^2 \Rightarrow \boxed{AB = 2k}$$

$$\text{In } \triangle ABC, \angle A = 90^\circ \xrightarrow{\text{T.C}} AB^2 = BD \cdot BC$$

$$(2k)^2 = 1k \cdot BC$$

$$4k^2 = 1 \cdot k \cdot BC \quad /: k$$

$$\boxed{BC = 4k} \Rightarrow BC = 3k$$

$$\xrightarrow{\text{T.C}} AC^2 = CB \cdot CD$$

$$AC^2 = 4k \cdot 3k$$

$$AC^2 = 12k^2 \Rightarrow AC = \sqrt{12k^2} = 2k\sqrt{3} \text{ cm.}$$

$$\text{Dan } AC = 36\sqrt{6} \text{ cm} \Rightarrow 2\sqrt{3} \cdot k = 36\sqrt{6}$$

$$k = \frac{36\sqrt{6}^2}{2\sqrt{3}} = 18\sqrt{2}$$

$$\boxed{k = 18\sqrt{2} \text{ cm}}$$

$$\Rightarrow AB = 2 \cdot 18\sqrt{2} = 36\sqrt{2} \text{ cm}$$

$$BC = 4 \cdot 18\sqrt{2} = 72\sqrt{2} \text{ cm}$$

$$BD = 18\sqrt{2} \text{ cm}$$

$$AD = \sqrt{3} \cdot 18\sqrt{2} = 18\sqrt{6} \text{ cm}$$

$$CD = 3 \cdot 18\sqrt{2} = 54\sqrt{2} \text{ cm}$$

$$A_{\triangle ABC} = \frac{b \cdot h}{2} = \frac{BC \cdot AD}{2} = \frac{72\sqrt{2} \cdot 18\sqrt{6}}{2} = 648\sqrt{12} =$$

$$= 648 \cdot 2\sqrt{3} = 1296\sqrt{3} \text{ cm}^2$$

$$P_{\triangle ABC} = 36\sqrt{2} + 72\sqrt{2} + 36\sqrt{6} =$$

$$= 108\sqrt{2} + 36\sqrt{6} = 36\sqrt{2}(3 + \sqrt{3}) \text{ cm}$$

25/93 cecl

$T_p: \triangle ABC$

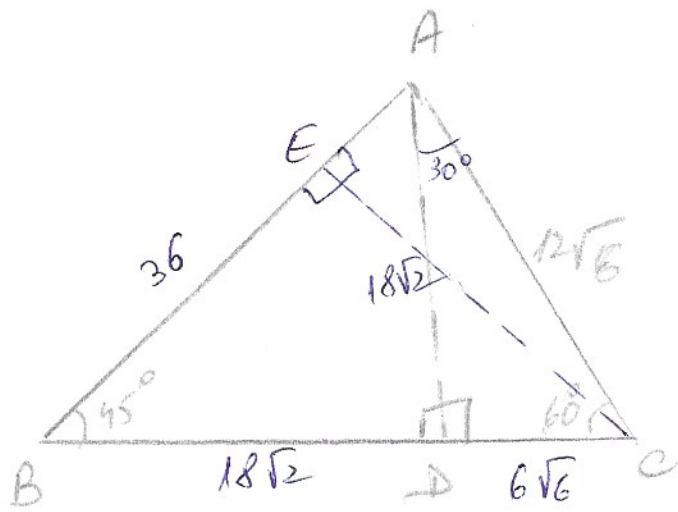
$m(\hat{B}) = 45^\circ$

$m(\hat{C}) = 60^\circ$

$AC = 12\sqrt{6} \text{ cm}$

Q: a)  $A, P_{\triangle ABC} = ?$

b)  $d(C, AB) = ?$



Dem:

File  $AD \perp BC \Rightarrow \triangle ADC - dr. \left. \begin{matrix} \\ \\ \end{matrix} \right\} \Rightarrow m(\hat{C}) = 60^\circ$

$\Rightarrow m(\hat{DAC}) = 30^\circ \xrightarrow{730-60-90} \Rightarrow DC = \frac{AC}{2} = \frac{12\sqrt{6}}{2} = 6\sqrt{6} \text{ cm}$

$T_p \Rightarrow AD^2 = AC^2 - DC^2$

$AD^2 = (12\sqrt{6})^2 - (6\sqrt{6})^2$

$= 12^2 \cdot 6 - 6^2 \cdot 6$

$= 6^2 \cdot 6 \cdot (2^2 - 1)$

$= 6^2 \cdot 6 \cdot 3 = 6^2 \cdot 3 \cdot 2 \cdot 3 \Rightarrow AD = \sqrt{6^2 \cdot 3^2 \cdot 2} = 18\sqrt{2} \text{ cm}$

In  $\triangle ADB, m(\hat{D}) = 90^\circ \left. \begin{matrix} \\ \\ \end{matrix} \right\} \Rightarrow m(\hat{BAC}) = 45^\circ \Rightarrow \triangle ADB - dr. is. \Rightarrow$

$\Rightarrow DB = DA = 18\sqrt{2} \text{ cm} \Rightarrow$

$T_p \Rightarrow AB^2 = BD^2 + AD^2$

$AB^2 = 2 \cdot (18\sqrt{2})^2$

$AB^2 = 2 \cdot 18^2 \cdot 2$

$AB = 18 \cdot 2 = \boxed{36 \text{ cm}}$

$BC = BD + DC = 18\sqrt{2} + 6\sqrt{6}$

$A_{\triangle ABC} = \frac{BC \cdot AD}{2} = \frac{(18\sqrt{2} + 6\sqrt{6}) \cdot 18\sqrt{2}}{2}$

$= \frac{18\sqrt{2}}{2} =$

$= (18\sqrt{2} + 6\sqrt{6}) \cdot 9\sqrt{2} \text{ cm}^2$

$P_{\triangle ABC} = 36 + 12\sqrt{6} + 18\sqrt{2} + 6\sqrt{6}$

$$d(C, AB) = h$$

$$\text{In } \triangle ABC : b_1 \cdot h_1 = b_2 \cdot h_2$$

$$BC \cdot AD = AB \cdot CE \Rightarrow CE = \frac{BC \cdot AD}{AB}$$

$$CE = \frac{(18\sqrt{2} + 6\sqrt{6}) \cdot 18\sqrt{2}}{\frac{36}{2}} - \frac{2 \cdot (9\sqrt{2} + 3\sqrt{6}) \cdot \sqrt{2}}{2}$$

$$CE = 9 \cdot 2 + 3\sqrt{12} = (18 + 6\sqrt{3}) \text{ cm}$$

TEMĂ cul pey 92 / 12, 17, 18, 19, 28.