

PROBLEME - PROPRIETĂȚILE TRIUNGHURILOR

TEST 1 / 177 cul

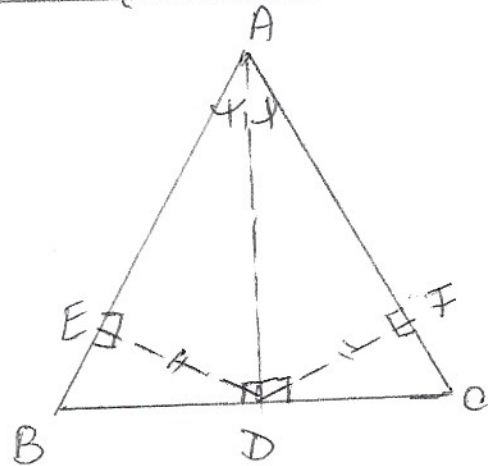
3. ∇p :

ΔABC

$AD \perp BC$

$DE \perp AB$

$DF \perp AC$



Cl: a) dacă $DE = DF \Rightarrow \Delta ABC$ -is.

b) Dacă ΔABC -is. $\Rightarrow DE = DF$

Dem:

a) Fie $DE = DF$

Fie ΔAED și ΔAFD - dreptunghice } i.c.
 În $[AD] = [AD]$ } $\Rightarrow \Delta ADE \equiv \Delta ADF$
 $[ED] = [FD]$ }
 \Downarrow
 $\sphericalangle EAD = \sphericalangle FAD$
 \Downarrow
 $AD = \text{bis. } \sphericalangle A$
 $AD = \text{mălt.} \} \Rightarrow$

b) Fie ΔABC -is } \Rightarrow

$\Rightarrow \Delta ABC$ -is.

$\Rightarrow AD = h$ } $AD = \text{bis.} \Rightarrow \sphericalangle DAE = \sphericalangle DAF$
 $AD = AD$
 $m(\hat{E}) = m(\hat{F}) = 90^\circ$ } i.c.
 \Rightarrow

$\Rightarrow \Delta AED \equiv \Delta AFD \Rightarrow DE = DF.$

4. 7p:

$\triangle ABC$ - drept.

$AC = \text{ipotenusa}$

$m(\widehat{BAC}) = 30^\circ$

$D \in (AC)$ ai. $m(\widehat{ABD}) = 60^\circ$

$E \in (AD)$ ai. $(BC = \text{bis. } \angle DBE)$

$BD = 10 \text{ cm}$

Cl: $BE = ?$

Scm:

In $\triangle ADB$, $m(\widehat{A}) = 30^\circ$
 $m(\widehat{ABD}) = 60^\circ \Rightarrow m(\widehat{ADB}) = 90^\circ \Rightarrow$

$\overset{\text{T } 30-60-90}{\Rightarrow} BD = \frac{AB}{2} \Rightarrow AB = 2 \cdot BD = 2 \cdot 10 = 20 \text{ cm}$

$m(\widehat{DBC}) = m(\widehat{ABC}) - m(\widehat{ABD}) = 90^\circ - 60^\circ = 30^\circ \Rightarrow m(\widehat{CBE}) = 30^\circ$

$\Rightarrow m(\widehat{DBE}) = 60^\circ$
 $m(\widehat{EDB}) = 90^\circ \Rightarrow m(\widehat{BED}) = 30^\circ \overset{\text{T } 30-60-90}{\Rightarrow} BD = \frac{BE}{2} \Rightarrow$

$\Rightarrow BE = 2 \cdot BD = 2 \cdot 10 = \underline{20 \text{ cm}}$

6/ 7p:

$\triangle ABC$ - dreptunghic

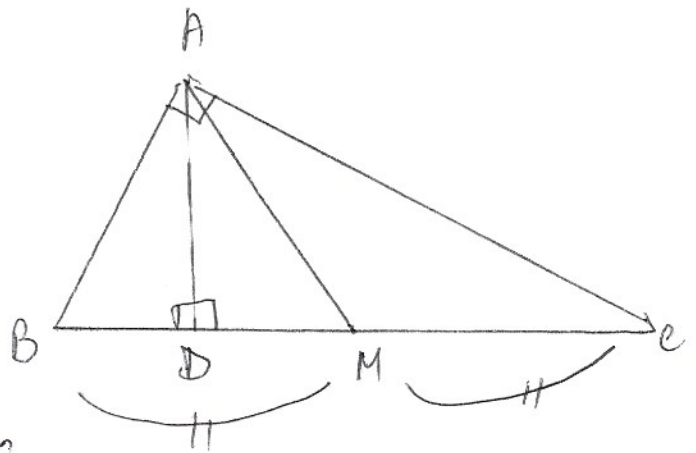
$m(\widehat{A}) = 90^\circ$

$AD = h \Rightarrow AD \perp BC$

Cl: a) $AD < \frac{BC}{2}$

b) dacă $AD = \frac{BC}{2} \Rightarrow \angle B \equiv \angle C$

c) $AD < \frac{1}{4}(AB + BC + CA)$



Dem:

$$a) \left. \begin{array}{l} \text{Fie } AM = \text{mediană} \\ \Delta ABC = \text{drept.} \end{array} \right\} \Rightarrow AM = \frac{BC}{2}$$

$$\left. \begin{array}{l} \text{În } \Delta ADM, m(\hat{D}) = 90^\circ \\ AD = \text{catetă} \\ AM = \text{ipotenuză} \end{array} \right\} \Rightarrow AD < AM$$

$$\Rightarrow AD < \frac{BC}{2}$$

$$b) \left. \begin{array}{l} \text{Dacă } AD = \frac{BC}{2} \\ \Delta ABC = \text{drept.} \end{array} \right\} \Rightarrow AD = \text{mediană} \left. \begin{array}{l} \Rightarrow \Delta ABC = \text{isoscel} \\ \Rightarrow \angle B \equiv \angle C \end{array} \right\}$$

$$c) \left. \begin{array}{l} \text{Din } \Delta ADB, m(\hat{D}) = 90^\circ \\ AD = \text{catetă} \\ AB = \text{ipet.} \end{array} \right\} \Rightarrow AD < AB \quad (1)$$

$$\left. \begin{array}{l} \text{Din } \Delta ADC, m(\hat{D}) = 90^\circ \\ AD = \text{catetă} \\ AC = \text{ipet.} \end{array} \right\} \Rightarrow AD < AC \quad (2)$$

(+)

$$\text{Din a) } \frac{AD}{1} < \frac{BC}{2} \Rightarrow 2 \cdot AD < BC$$

$$4 \cdot AD < AB + AC + BC \quad /:4$$

$$AD < \frac{1}{4} \cdot (AB + AC + BC)$$

TEMĂ : pag 177 / Test 1 ex 1, 2, 5

pag 178 / Test 2 ex 6.