



TIIAME

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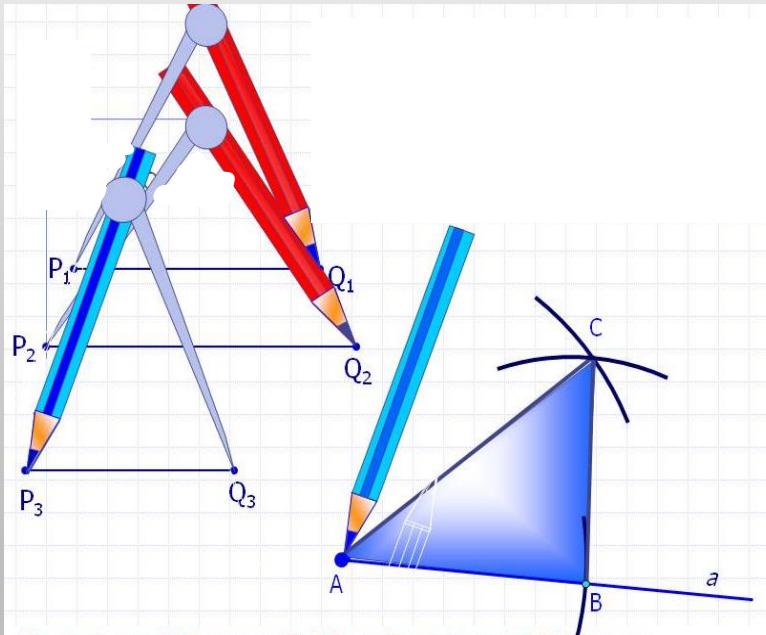
I kurs. GEOMETRIYA

7 - Mavzu:

Uchburchak tengsizligiga oid masalalar.

Uchburchak balandligi. Uchburchak bissektrisasi.

Tomonlarining uzunliklari



Uzunliklari a , b , c bo'lgan
kesmalardan

$$\begin{aligned}a &< b+c, \\b &< a+c, \\c &< b+a\end{aligned}$$

bo'lgandagina uchburchak yasash
mumkin.



TIIAME

MASALA

a ($-1 < a < 0,5$) ning qanday qiymatlarida uzunliklari mos ravishda $1+a$, $1-2a$ va 2 ga teng bo'lgan kesmalardan uchburchak yasash mumkin?

Yechish:

Uchburchakning istlgan tomoni uning qolgan ikki tomoni yig'indisidan kichik shunga ko'ra

$$\begin{cases} 1+a+1-2a > 2 \\ 1+a+2 > 1 - 2a \\ 1-2a+2 > 1 + a \end{cases} \Leftrightarrow \begin{cases} -a > 0 \\ 3a > -2 \\ 2 > 3a \end{cases} \Leftrightarrow -\frac{2}{3} < a < 0$$



Agar uchburchakning tomonlari o'sish tartibida $a \leq b \leq c$ joylashgan bolsa,

$$a^2 + b^2 = c^2$$

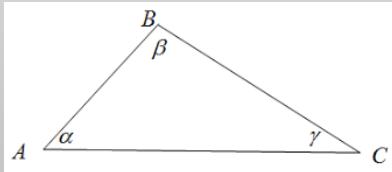
bo'lsa, u to'g'ri burchakli uchburchak.



Agar

$$a^2 + b^2 > c^2$$

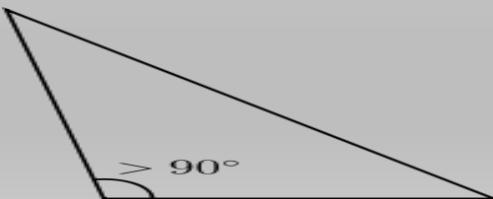
bo'lsa, o'tkir burchakli uchburchak ,



Agar

$$a^2 + b^2 < c^2$$

bo'lsa, o'tmas burchakli uchburchak bo'ladi





MASALA



TIIAME

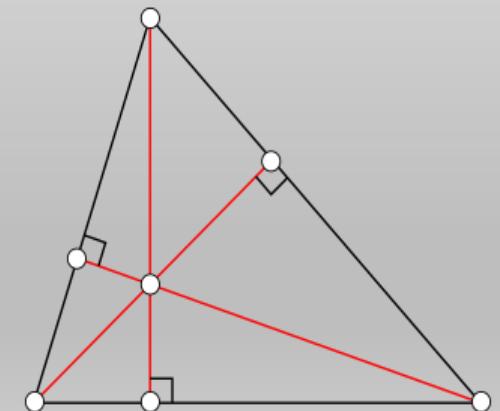
Agar uchburchak ikki tomoni mos ravishda 3 va 4 ga teng bo'lib, uchinchi tomoni $c \in (5; 7)$ bo'lsa, uchburchakning tipini aniqlang.

YECHILISHI:

$c^2 > 25 = 3^2 + 4^2$ tengsizlikdan va qoidaga ko'ra bu o'tmas burchakli uchburchak degan xulosaga kelamiz.

UCHBURCHAK BALANDLIGI

- ❖ Uchburchakning balandliklari yotgan to'g'ri chiziqlar bir nuqtada kesishadi. Bu nuqta uchburchakning ortomarkazi deyiladi.
- ❖ Uchburchakning o'rta chizig'i uning balandligini (bissektrisasini, medanasini) teng ikkiga bo'ladi.
- ❖ Teng tomonli uchburchakning ichidagi ixtiyoriy nuqtadan uning tomonlariga tushirilgan perpendikulyarlar yig'indisi shu uchburchakning balandligiga teng.





UCHBURCHAK BISSEKTRISASI



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- ❖ Uchburchakning bissektrisalari bir nuqtada kesishadi.
- ❖ Bissektrisaning c tomonidan ajratgan kesmalari $x=AD$, $y=DB$ bo'lsin. U holda $ax=by$ va $x = \frac{c}{a+b} * b, y = \frac{c}{a+b} * a$ tengliklar o'rinali.
- ❖ Uchburchakning C uchidan chiqarilgan bissektrisasi l_c quyidagicha topiladi:

$$l_c^2 = ab - xy, l_c = \frac{2}{a+b} \sqrt{abp(p-c)}, p = \frac{a+b+c}{2}.$$

- ❖ ABC uchburchakda bissektrisalarining kesishish nuqtasi O bo'lsa, $\frac{OC}{OD} = \frac{a+b}{c}$ tenglik o'rinali.
- ❖ Uchburchakning C uchidan l_c bissektrisa tushirilgan. U holda $l_c = \frac{2ab \cos \frac{\gamma}{2}}{a+b}$

