

***9-sinflar uchun Geometriya
fanidan 30-maktab o'qituvchisi
Ochilov Zafarning bir soatlik
dars ishlanmasi***

**MAVZU: O'TKIR BURCHAK SINUSI,
KOSINUSI, TANGENSI VA
KOTANGENSI**

* Dars maqsadi:

* A) Ta'limiy; O'quvchilarga oddiy trigonometrik tushunchalar haqida bilim berish;

* B) Tarbiyaviy: O'quvchilarni fikrlash dunyosini kengaytirish, ularni mehnatsevarlik fazilatlarini rivojlantirish

* Dars turi: Yangi bilimni o'zlashtirish

* Dars jihozi: Kompyuter, ko'rgazmali qurollar

* Dars uslubi: Noan'anaviy

** Darsning borishi*

I. Tashkiliy qism

II. Uyga vazifani so'rash. Aqliy hujum

1) Uchburchaklar burchagiga ko'ra necha xil bo'ladi?

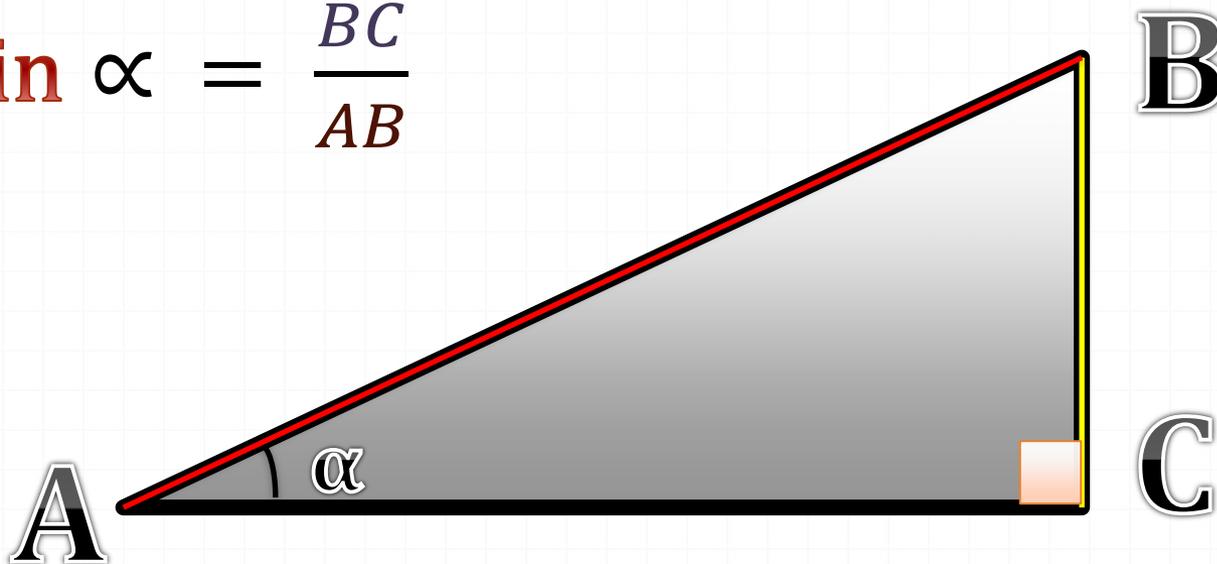
2) Qanday uchburchak to'g'ri burchakli uchburchak deyiladi?

3) Pifagor teoremasini ayting.

III. Yangi mavzu bayoni

To'g'ri burchakli uchburchakning o'tkir burchak sinusi

$$\sin \alpha = \frac{BC}{AB}$$

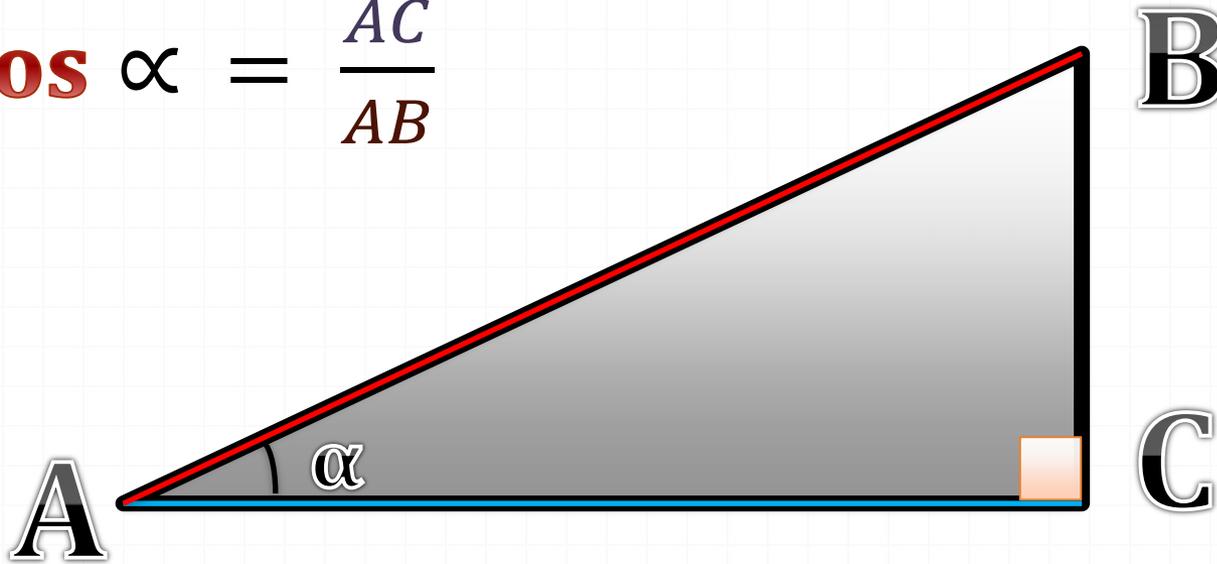


Ta'rif: To'g'ri burchakli uchburchak o'tkir (α) burchagining **sinusi** deb, α burchak qarshisidagi katet (BC)ning gipotenuza (AB) ga nisbatiga aytiladi.

Sin α "Sinus alfa"

To'g'ri burchakli uchburchakning o'tkir burchak kosinusi

$$\cos \alpha = \frac{AC}{AB}$$

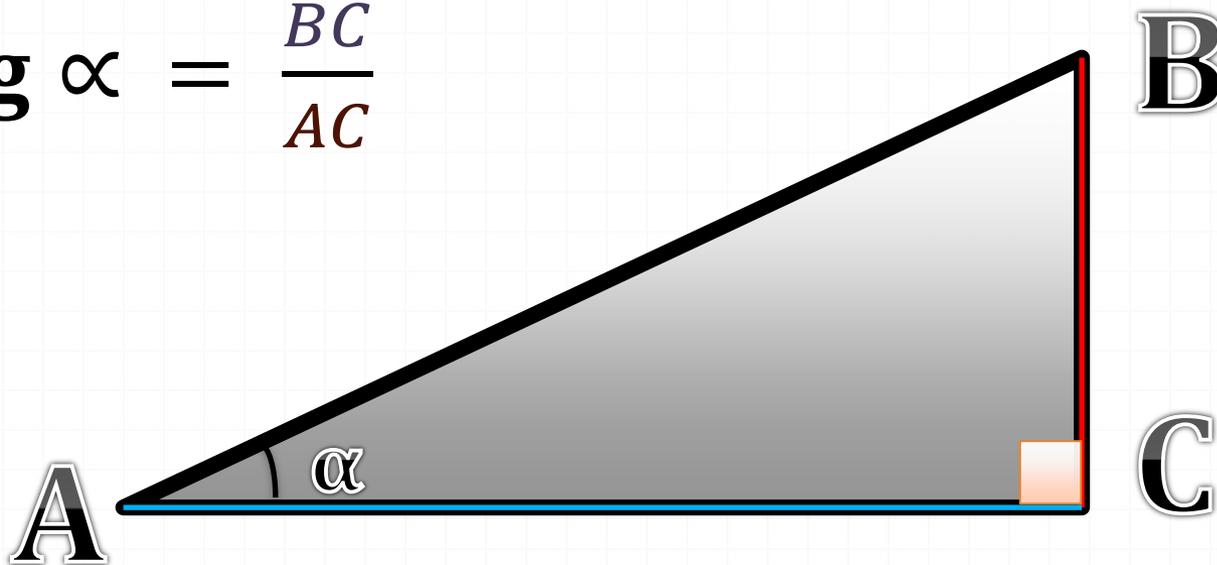


***Ta'rif:** To'g'ri burchakli uchburchak (α) burchagining kosinusi deb, α burchak qarshisidagi katet (AC)ning gipotenuza (AB) ga nisbatiga aytiladi.*

$\cos \alpha$ "Kosinus alfa"

To'g'ri burchakli uchburchakning o'tkir burchak tangensi

$$\operatorname{tg} \alpha = \frac{BC}{AC}$$

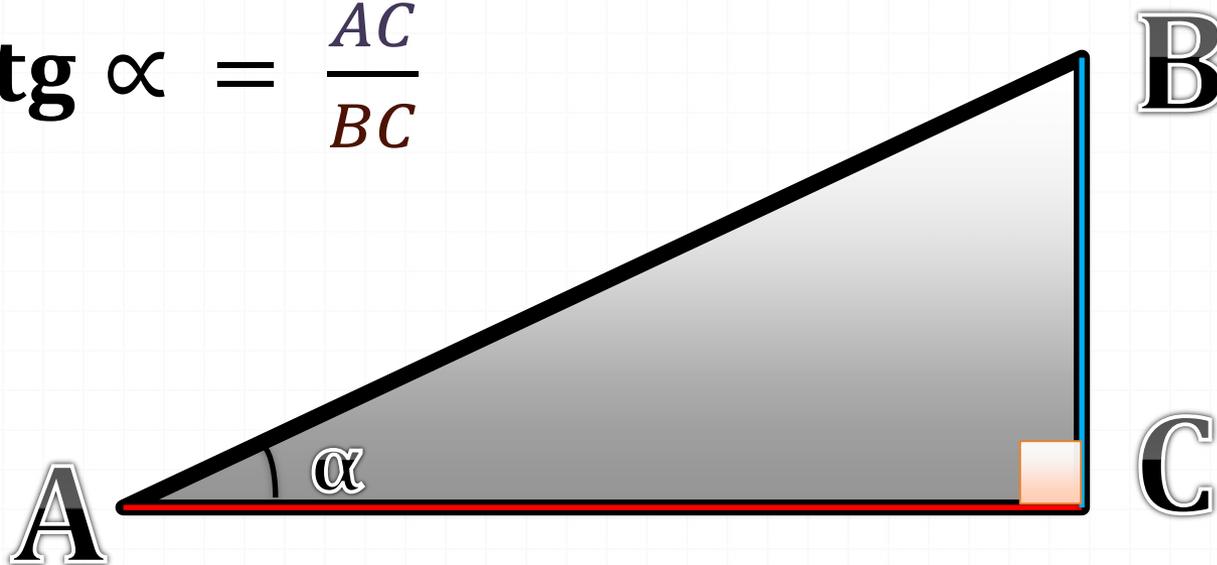


Ta'rif: To'g'ri burchakli uchburchak (α) burchagining *tangensi* deb, α burchak qarshisidagi katet (BC)ning yopishgan katet (AC)ga nisbatiga aytiladi.

$\operatorname{tg} \alpha$ “Tangens alfa”

To'g'ri burchakli uchburchakning o'tkir burchak kotangensi

$$\text{ctg } \alpha = \frac{AC}{BC}$$



Ta'rif: To'g'ri burchakli uchburchak (α) burchagining **kotangensi** deb, α burchakka yopishgan katet (AC)ning qarshisidagi katet (BC)ga nisbatiga aytiladi.

Ctg α "Kotangens alfa"

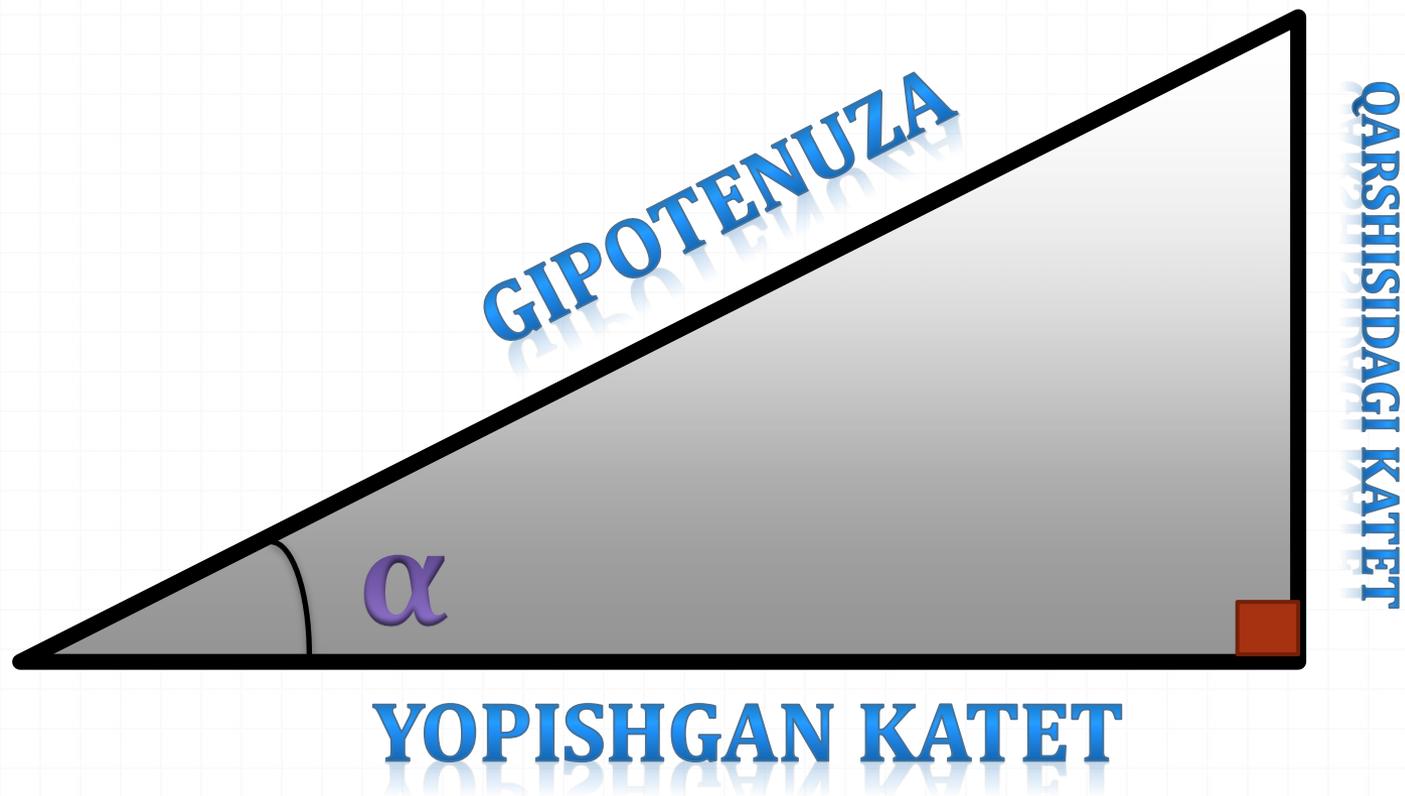
Yuqoridagi ta'riflardan kelib chiqadigan formulalar

$$1. \quad \mathbf{tg \alpha = \frac{\sin \alpha}{\cos \alpha}}; \text{ Asos: } \frac{\sin \alpha}{\cos \alpha} = \frac{BC}{AB} : \frac{AC}{AB} = \frac{BC}{AB} \cdot \frac{AB}{AC} = \frac{BC}{AC} = \mathbf{tg \alpha}$$

$$2. \quad \mathbf{ctg \alpha = \frac{\cos \alpha}{\sin \alpha}}; \text{ Asos: } \frac{\cos \alpha}{\sin \alpha} = \frac{AC}{AB} : \frac{BC}{AB} = \frac{AC}{AB} \cdot \frac{AB}{BC} = \frac{AC}{BC} = \mathbf{ctg \alpha}$$

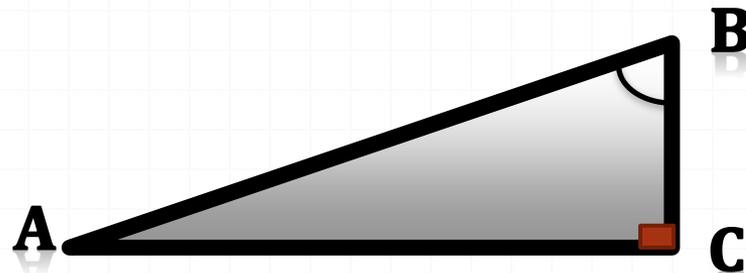
$$3. \quad \mathbf{tg \alpha \cdot ctg \alpha = 1}; \text{ Asos: } \mathbf{tg \alpha \cdot ctg \alpha = \frac{BC}{AC} \cdot \frac{AC}{BC} = 1}$$

*To'g'ri burchakli uchburchak tomonlarining
o'tkir burchakka nisbatan nomlanishi*



IV. Mustahkamlash

- o **Masala:** ΔABC da $\angle C = 90^\circ$, $AC = 8$ sm, $BC = 15$ sm bo'lsa, uning $\angle B$ sinusi, kosinusi, tangensi va kotangensini toping.



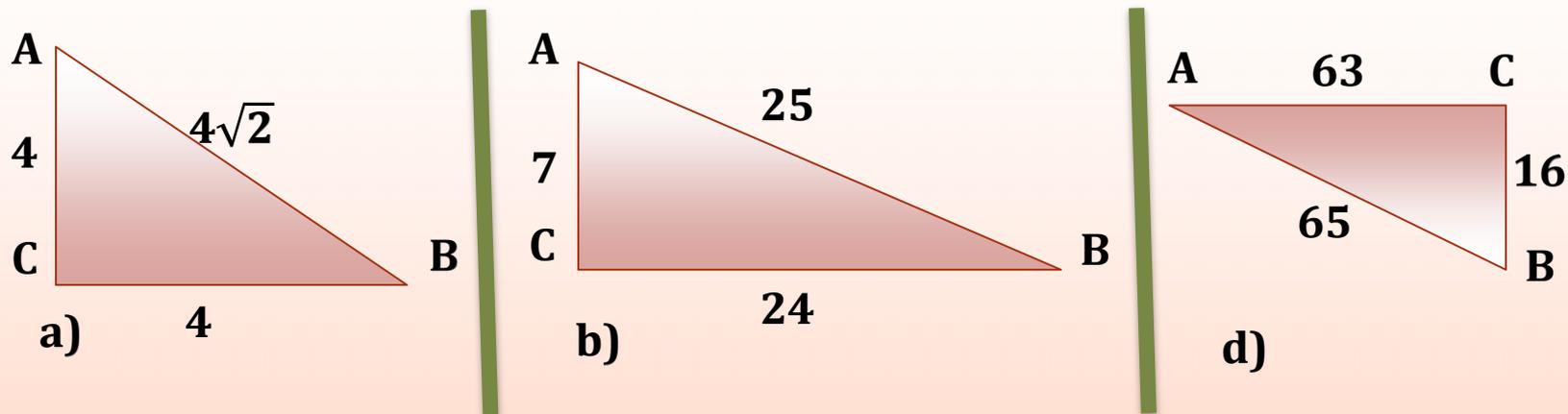
- o **Yechilishi:** Pifagor formulasidan foydalanib, AB gipotenuzani topamiz.

$$AB^2 = AC^2 + BC^2 = 8^2 + 15^2 = 64 + 225 = 289 \qquad AB = \sqrt{289} = 17.$$

Sinus, kosinus, tangens va kotangens ta'riflaridan foydalanib, quyidagilarni hosil qilamiz:

$$\sin B = \frac{AC}{AB} = \frac{8}{17}; \quad \cos B = \frac{BC}{AB} = \frac{15}{17} \quad \text{tg } B = \frac{AC}{BC} = \frac{8}{15}; \quad \text{ctg } B = \frac{BC}{AC} = \frac{15}{8}$$

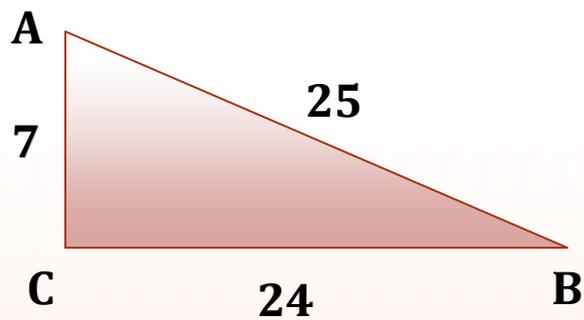
3-masala: Rasmdagi ma'lumotlar asosida $\sin A$, $\cos A$, $\sin B$, $\cos B$ ni toping.



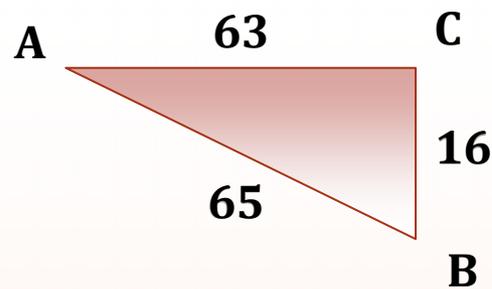
Masala yechimi:

$$a) \sin A = \frac{BC}{AB} = \frac{4}{4\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2} \quad \cos A = \frac{AC}{AB} = \frac{4}{4\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\sin B = \frac{AC}{AB} = \frac{4}{4\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2} \quad \cos B = \frac{BC}{AB} = \frac{4}{4\sqrt{2}} \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$



b)



d)

Masala yechimi:

$$b) \sin A = \frac{BC}{AB} = \frac{24}{25} \quad \cos A = \frac{AC}{AB} = \frac{7}{25} \quad \sin B = \frac{AC}{AB} = \frac{7}{25} \quad \cos B = \frac{BC}{AB} = \frac{24}{25}$$

$$d) \sin A = \frac{BC}{AB} = \frac{16}{65} \quad \cos A = \frac{AC}{AB} = \frac{63}{65} \quad \sin B = \frac{AC}{AB} = \frac{63}{65} \quad \cos B = \frac{BC}{AB} = \frac{16}{65}$$

V. O'quvchilarni baholash. Xulosa.

VI. Uyga vazifa: 53-betdagi 4-masala.

E'TIBORINGIZ
UCHUN
RAHMAT!!!