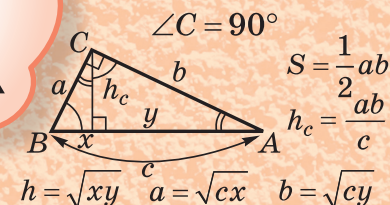
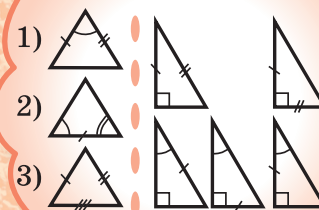
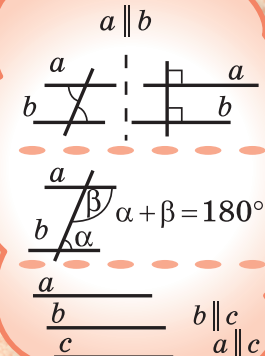


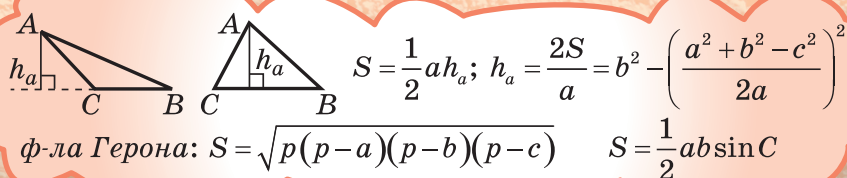
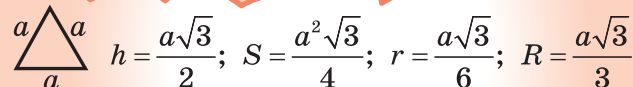
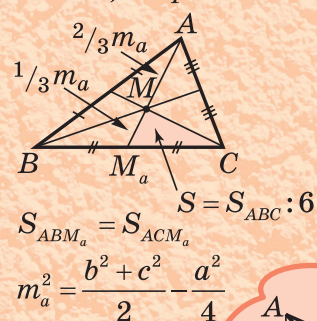
ознаки рівності



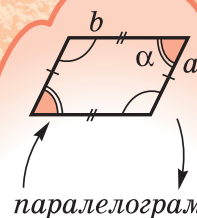
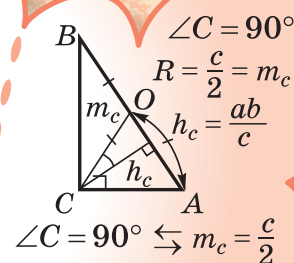
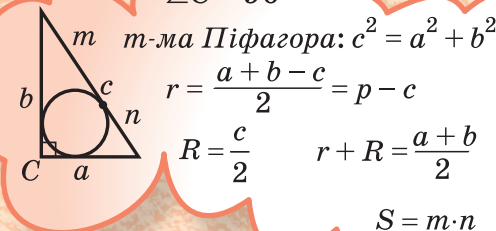
ознаки



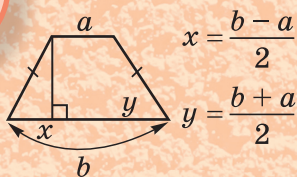
M – центроїд



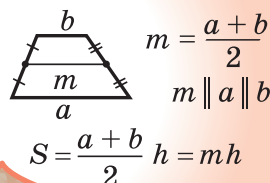
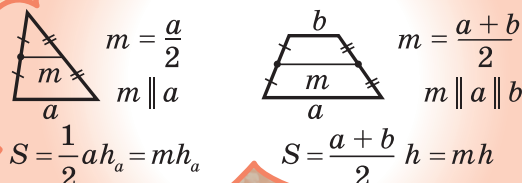
$\angle C = 90^\circ$



трапеція

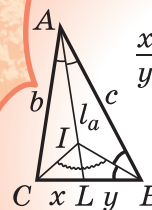


середня лінія



$\triangle ABC$

ВЛАСТИВОСТІ $AL \equiv l_a$
 l_a – ГМТ, рівновіддалених від [AC] і [AB]



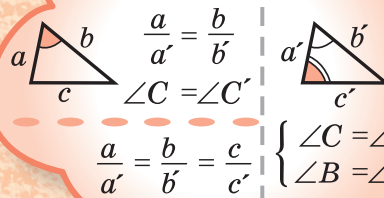
формула Лагранжа

$$\angle CIB = 90^\circ + \frac{\angle A}{2} \quad l_a^2 = bc - xy$$

l_a завжди між h_a і m_a

$$l_a = \frac{2bc}{b + c} \cos \frac{A}{2}$$

ознаки подібності



Теорема синусів

$$\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma} = 2R$$

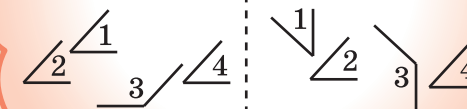
Теорема косинусів

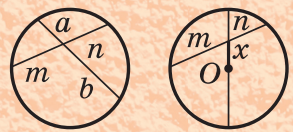
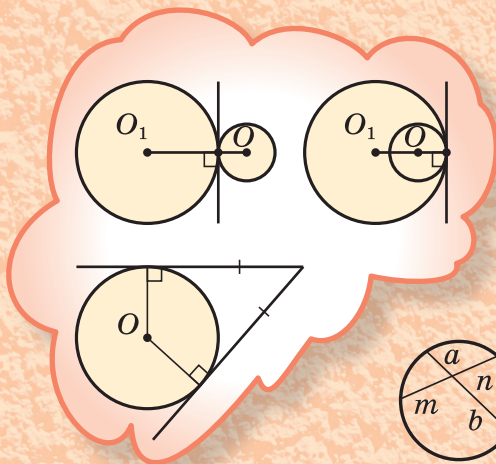
$$a^2 = b^2 + c^2 - 2bc \cos \alpha$$

Кути із взаємно

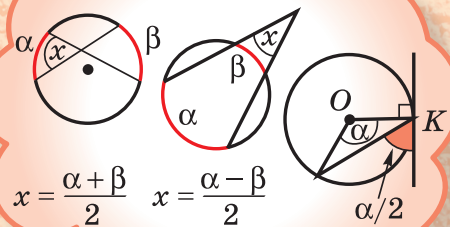
паралельними перпендикулярними

сторонами або рівні, або в сумі складають 180°

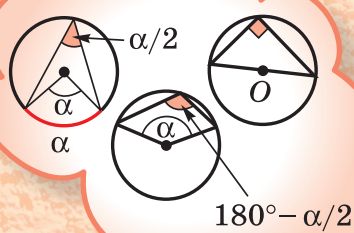




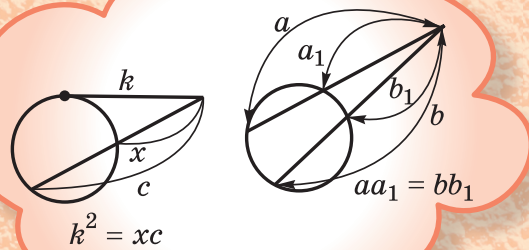
$$mn = ab \quad x^2 = R^2 - mn$$



$$x = \frac{\alpha + \beta}{2} \quad x = \frac{\alpha - \beta}{2}$$



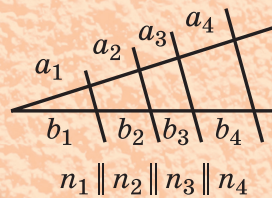
$$180^\circ - \alpha/2$$



$$k^2 = xc$$

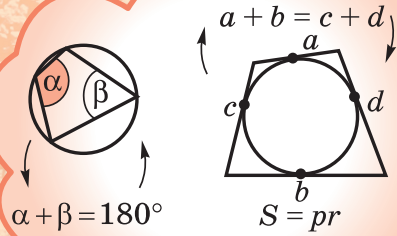
$$aa_1 = bb_1$$

теорема Фалеса



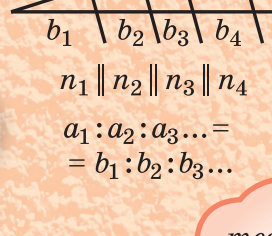
$$n_1 \parallel n_2 \parallel n_3 \parallel n_4$$

$$a_1 : a_2 : a_3 : \dots = b_1 : b_2 : b_3 : \dots$$

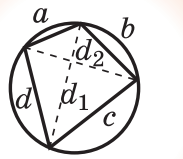


$$\alpha + \beta = 180^\circ$$

$$S = pr$$



теорема Птолемея



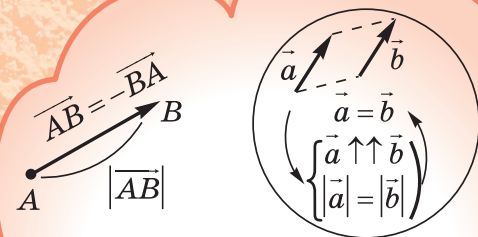
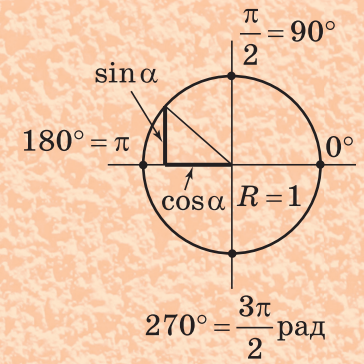
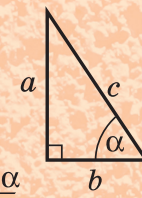
$$ac + bd = d_1 d_2$$



$$\angle 1 + \angle 2 + \angle 3 + \angle 4 = 360^\circ$$

$$\cos \alpha = \frac{b}{c} \quad \sin \alpha = \frac{a}{c} \quad \operatorname{tg} \alpha = \frac{a}{b} = \frac{\sin \alpha}{\cos \alpha} \quad \operatorname{ctg} \alpha = \frac{b}{a} = \frac{\cos \alpha}{\sin \alpha}$$

$$\operatorname{tg} \alpha \cdot \operatorname{ctg} \alpha = 1 \quad \sin^2 \alpha + \cos^2 \alpha = 1 \quad \operatorname{tg}^2 \alpha + 1 = \frac{1}{\cos^2 \alpha} \quad \operatorname{ctg}^2 \alpha + 1 = \frac{1}{\sin^2 \alpha}$$



колінеарні

$$\vec{m} \parallel \vec{u} \parallel \vec{p}$$

$$\vec{m} \uparrow \vec{u} \uparrow \vec{p}$$

$$\vec{u} \uparrow \vec{p}$$

$$\vec{c} = \vec{a} + \vec{b}$$

$$\vec{b} = \vec{c} - \vec{a}$$

$$\vec{a} \cdot \vec{a} = |\vec{a}|^2$$

$$\vec{a} \cdot \vec{b} = 0 \Leftrightarrow \vec{a} \perp \vec{b}$$

$$\cos(\hat{a} \hat{b}) = \frac{a_1 b_1 + a_2 b_2}{|\vec{a}| \cdot |\vec{b}|}$$

Правильний n-кутник



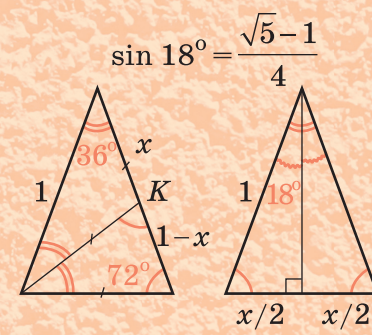
$$R = \frac{a}{2 \sin \frac{180^\circ}{n}} \quad r = \frac{a}{2} \operatorname{ctg} \frac{180^\circ}{n}$$



$$\alpha_1 + \alpha_2 + \dots + \alpha_n = 180^\circ (n - 2)$$

$$\beta_1 + \beta_2 + \dots + \beta_n = 360^\circ$$

$$a_i < a_1 + \dots + a_{i-1} + a_{i+1} + \dots + a_n$$



$$\frac{x}{1-x} \rightarrow x = \frac{\sqrt{5}-1}{2}$$

$$\sin 18^\circ = \frac{x}{2} : 1$$