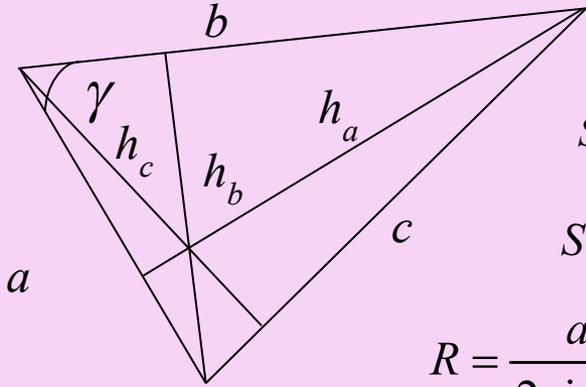


Треугольники

(основные формулы)

Произвольный треугольник.



$$S = \frac{1}{2} ah_a = \frac{1}{2} bh_b = \frac{1}{2} ch_c$$

$$S = \frac{1}{2} ab \sin \gamma = \frac{1}{2} ac \sin \beta = \frac{1}{2} bc \sin \alpha$$

$$S = \sqrt{p(p-a)(p-b)(p-c)} \quad (p - \text{полупериметр})$$

$$R = \frac{a}{2 \sin \alpha}$$

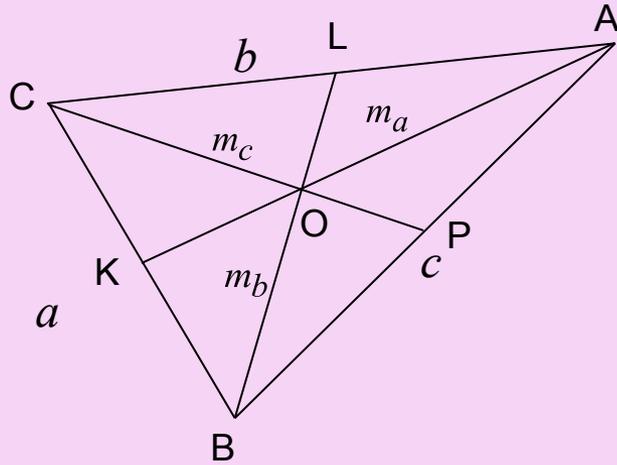
$$S = \frac{abc}{4R}$$

$$R = \frac{abc}{4S}$$

$$S = p \cdot r$$

$$r = \frac{S}{p}$$

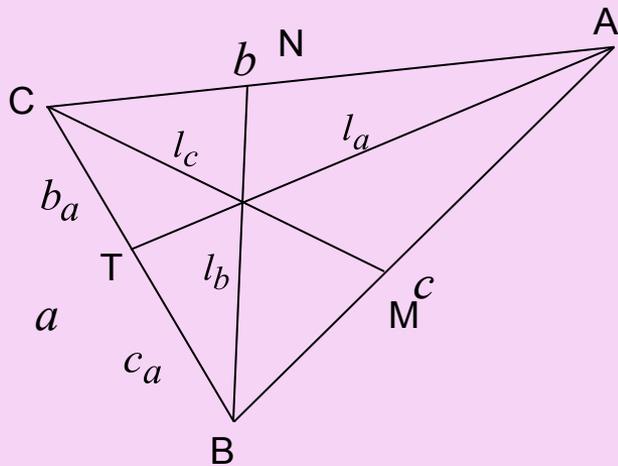
Произвольный треугольник.



m_a, m_b, m_c - медианы

$$\frac{AO}{OK} = \frac{BO}{OL} = \frac{CO}{OP} = \frac{2}{1}$$

$$m_a = \frac{\sqrt{2b^2 + 2c^2 - a^2}}{2}$$

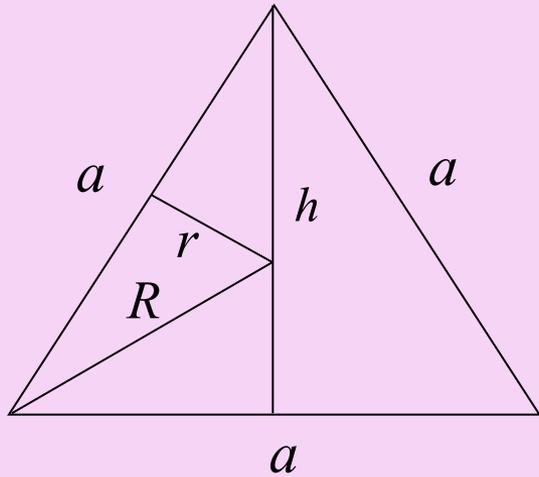


l_a, l_b, l_c - биссектрисы

$$\frac{AC}{BC} = \frac{AM}{BM}, \quad \frac{AB}{CB} = \frac{AN}{CN}, \quad \frac{BA}{CA} = \frac{BT}{CT}$$

$$l_a = \sqrt{bc - b_a c_a}$$

Правильный (равносторонний) треугольник.



$$S = \frac{a^2 \sqrt{3}}{4}$$

$$h = \frac{a\sqrt{3}}{2}$$

$$R = \frac{a\sqrt{3}}{3} \quad (R = \frac{a}{\sqrt{3}})$$

$$r = \frac{a\sqrt{3}}{6} \quad (r = \frac{a}{2\sqrt{3}})$$

Прямоугольный треугольник.

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

$$S = \frac{ab}{2} \quad R = \frac{c}{2} \quad r = \frac{a+b-c}{2}$$

$$h_c^2 = a_c \cdot b_c \quad a^2 = c \cdot a_c \quad b^2 = c \cdot b_c$$

