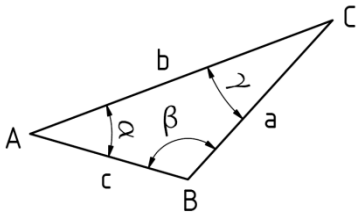
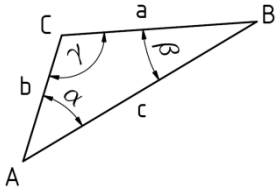
Formeln Trigonometrie allgeimeines Dreieck

$$\frac{a}{\sin(\alpha)} = \frac{b}{\sin(\beta)} = \frac{c}{\sin(\gamma)} = 2 \bullet r$$ **Sinussatz**

r= Umkreisradius



$$a^2 = b^2 + c^2 - 2 \bullet b \bullet c \bullet \cos(\alpha)$$
$$b^2 = a^2 + c^2 - 2 \bullet a \bullet c \bullet \cos(\beta)$$
$$c^2 = a^2 + b^2 - 2 \bullet a \bullet b \bullet \cos(\gamma)$$ **Kosinussatz**



Inkreisradius ρ

$$\rho = \frac{A}{s}$$

s= Halber Umfang
ρ= Inkreisradius

Umkreis Radius r

$$r = \frac{a \bullet b \bullet c}{4 \bullet A}$$

A= Dreiecksfläche
r= Umkreisradius

Trigonometrie rechtwinkliges Dreieck

Sinus	$\sin(\alpha) = \frac{GK}{HYP}$	$\alpha = \arcsin\left(\frac{GK}{HYP}\right)$	$GK = \sin(\alpha) \bullet HYP$	$HYP = \frac{GK}{\sin(\alpha)}$
Kosinus	$\cos(\alpha) = \frac{AK}{HYP}$	$\alpha = \arccos\left(\frac{AK}{HYP}\right)$	$AK = \cos(\alpha) \bullet HYP$	$HYP = \frac{AK}{\cos(\alpha)}$
Tangens	$\tan(\alpha) = \frac{GK}{AK}$	$\alpha = \arctan\left(\frac{GK}{AK}\right)$	$GK = \tan(\alpha) \bullet AK$	$AK = \frac{GK}{\tan(\alpha)}$

Flächenberechnung mit Heron

$$s = \frac{U}{2} = \frac{a+b+c}{2}$$
$$A = \sqrt{s \bullet (s-a) \bullet (s-b) \bullet (s-c)}$$

Zweite Lösung im Intervall 0…360° bei arcsin, arccos und arctan-Funktionen

$$L1: \alpha_1 = arcsin(x) \qquad L2: \alpha_2 = 180° - \alpha_1$$

$$L1: \alpha_1 = arccos(x) \qquad L2: \alpha_2 = 360° - \alpha_1$$

$$L1: \alpha_1 = arctan(x) \qquad L2: \alpha_2 = 180° + \alpha_1$$