**Таблица связи между тригонометрическими функциями**

| Функция | $\sin\alpha$ | $\cos\alpha$ | $\operatorname{tg}\alpha$ | $\operatorname{ctg}\alpha$ | $\sec\alpha$ | $\operatorname{cosec}\alpha$ |
|---|---|---|---|---|---|---|
| $\sin\alpha$ | | $\pm\sqrt{1-\cos^2\alpha}$ | $\frac{\operatorname{tg}\alpha}{\pm\sqrt{1+\operatorname{tg}^2\alpha}}$ | $\frac{1}{\pm\sqrt{1+\operatorname{ctg}^2\alpha}}$ | $\frac{\pm\sqrt{\sec^2\alpha-1}}{\sec\alpha}$ | $\frac{1}{\operatorname{cosec}\alpha}$ |
| $\cos\alpha$ | $\pm\sqrt{1-\sin^2\alpha}$ | | $\frac{1}{\pm\sqrt{1+\operatorname{tg}^2\alpha}}$ | $\frac{\operatorname{ctg}\alpha}{\pm\sqrt{1+\operatorname{ctg}^2\alpha}}$ | $\frac{1}{\sec\alpha}$ | $\frac{\pm\sqrt{\operatorname{cosec}^2\alpha-1}}{\operatorname{cosec}\alpha}$ |
| $\operatorname{tg}\alpha$ | $\frac{\sin\alpha}{\pm\sqrt{1-\sin^2\alpha}}$ | $\frac{\pm\sqrt{1-\cos^2\alpha}}{\cos\alpha}$ | | $\frac{1}{\operatorname{ctg}\alpha}$ | $\pm\sqrt{\sec^2\alpha-1}$ | $\frac{1}{\pm\sqrt{\operatorname{cosec}^2\alpha-1}}$ |
| $\operatorname{ctg}\alpha$ | $\frac{\pm\sqrt{1-\sin^2\alpha}}{\sin\alpha}$ | $\frac{\cos\alpha}{\pm\sqrt{1-\cos^2\alpha}}$ | $\frac{1}{\operatorname{tg}\alpha}$ | | $\frac{1}{\pm\sqrt{\sec^2\alpha-1}}$ | $\pm\sqrt{\operatorname{cosec}^2\alpha-1}$ |
| $\sec\alpha$ | $\frac{1}{\pm\sqrt{1-\sin^2\alpha}}$ | $\frac{1}{\cos\alpha}$ | $\pm\sqrt{1+\operatorname{tg}^2\alpha}$ | $\frac{\pm\sqrt{1+\operatorname{ctg}^2\alpha}}{\operatorname{ctg}\alpha}$ | | $\frac{\operatorname{cosec}\alpha}{\pm\sqrt{\operatorname{cosec}^2\alpha-1}}$ |
| $\operatorname{cosec}\alpha$ | $\frac{1}{\sin\alpha}$ | $\frac{1}{\pm\sqrt{1-\cos^2\alpha}}$ | $\frac{\pm\sqrt{1+\operatorname{tg}^2\alpha}}{\operatorname{tg}\alpha}$ | $\pm\sqrt{1+\operatorname{ctg}^2\alpha}$ | $\frac{\sec\alpha}{\pm\sqrt{\sec^2\alpha-1}}$ | |

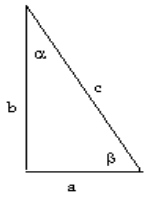
**Значение тригонометрических функций некоторых углов**

| $\alpha$ | 0° | 30° | 45° | 60° | 90° | 120° | 180° | 270° | 360° |
|---|---|---|---|---|---|---|---|---|---|
| $\sin\alpha$ | 0 | 1/2 | $\sqrt{2}/2$ | $\sqrt{3}/2$ | 1 | $\sqrt{3}/2$ | 0 | - 1 | 0 |
| $\cos\alpha$ | 1 | $\sqrt{3}/2$ | $\sqrt{2}/2$ | 1/2 | 0 | - (1/2) | - 1 | 0 | 1 |
| $\operatorname{tg}\alpha$ | 0 | $1/\sqrt{3}$ | 1 | $\sqrt{3}$ | $\infty$ | $-\sqrt{3}$ | 0 | $\infty$ | 0 |
| $\operatorname{ctg}\alpha$ | $\infty$ | $\sqrt{3}$ | 1 | $1/\sqrt{3}$ | 0 | $-(1/\sqrt{3})$ | $\infty$ | 0 | $\infty$ |
| $\sec\alpha$ | 1 | $2/\sqrt{3}$ | $\sqrt{2}$ | 2 | $\infty$ | - 2 | - 1 | $\infty$ | 1 |
| $\operatorname{cosec}\alpha$ | $\infty$ | 2 | $\sqrt{2}$ | $2/\sqrt{3}$ | 1 | $2/\sqrt{3}$ | $\infty$ | - 1 | $\infty$ |

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

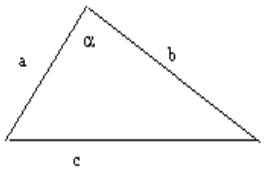
$$\sin\beta=\frac{b}{c}\quad \cos\beta=\frac{a}{c}\quad \operatorname{tg}\beta=\frac{b}{c}$$

$c^2=a^2+b^2$ т теор Пифагора




Теорема косинусов:

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




Теорема синусов:

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