

$$\sin x + \sin y = 2 \sin \frac{x+y}{2} \cos \frac{x-y}{2}$$

$$\sin x - \sin y = 2 \sin \frac{x-y}{2} \cos \frac{x+y}{2}$$

$$\cos x + \cos y = 2 \cos \frac{x+y}{2} \cos \frac{x-y}{2}$$

$$\cos x - \cos y = -2 \sin \frac{x+y}{2} \sin \frac{x-y}{2}$$

$$\operatorname{tg} x + \operatorname{tg} y = \frac{\sin(x+y)}{\cos x \cos y}$$

$$\operatorname{ctg} x + \operatorname{ctg} y = \frac{\sin(x+y)}{\sin x \sin y}$$

$$\operatorname{tg} x - \operatorname{tg} y = \frac{\sin(x-y)}{\cos x \cos y}$$

$$\operatorname{ctg} x - \operatorname{ctg} y = -\frac{\sin(x-y)}{\sin x \sin y}$$

$$\operatorname{tg} x + \operatorname{ctg} y = \frac{\cos(x-y)}{\cos x \sin y}$$

$$\operatorname{tg} x - \operatorname{ctg} y = -\frac{\cos(x+y)}{\cos x \sin y}$$

$$\operatorname{tg} x + \operatorname{ctg} x = \frac{1}{\sin x \cos x} = \frac{2}{\sin 2x}$$

$$\operatorname{tg} x - \operatorname{ctg} x = -2 \frac{\cos 2x}{\sin 2x} = -2 \operatorname{ctg} 2x$$

$$\cos x + \sin x = \sqrt{2} \cos(45^\circ - x) = \sqrt{2} \sin(45^\circ + x)$$

$$\cos x - \sin x = \sqrt{2} \sin(45^\circ - x) = \sqrt{2} \cos(45^\circ + x)$$

$$a \sin x + b \cos x = \sqrt{a^2 + b^2} \sin(x + \varphi),$$

$$\text{где } \sin \varphi = \frac{b}{\sqrt{a^2 + b^2}}, \quad \cos \varphi = \frac{a}{\sqrt{a^2 + b^2}}$$