

$$1) \sin 2\alpha = 2 \sin \alpha \cdot \cos \alpha$$

$$2) \cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha = \\ = 1 - 2 \sin^2 \alpha = 2 \cos^2 \alpha - 1$$

$$3) \operatorname{tg} 2\alpha = \frac{2 \operatorname{tg} \alpha}{1 - \operatorname{tg}^2 \alpha}$$

$$4) \operatorname{ctg} 2\alpha = \frac{\operatorname{ctg}^2 \alpha - 1}{2 \operatorname{ctg} \alpha}$$