

$$\sin(x+y) = \sin x \cdot \cos y + \sin y \cdot \cos x$$

$$\sin(x-y) = \sin x \cdot \cos y - \sin y \cdot \cos x$$

$$\cos(x+y) = \cos x \cdot \cos y - \sin y \cdot \sin x$$

$$\cos(x-y) = \cos x \cdot \cos y + \sin y \cdot \sin x$$

Формулы двойных углов

$$\sin 2x = \sin(x+x) = \sin x \cdot \cos x + \sin x \cdot \cos x = 2 \sin x \cdot \cos x$$

$$\cos 2x = \cos(x+x) = \cos x \cdot \cos x - \sin x \cdot \sin x =$$

$$= \cos^2 x - \sin^2 x = \cos^2 x - (1 - \cos^2 x) = 2 \cos^2 x - 1$$

$$= \cos^2 x - \sin^2 x = 1 - \sin^2 x - \sin^2 x = 1 - 2 \sin^2 x$$

Формулы понижения степени

$$\cos 2x = 2 \cos^2 x - 1 \quad \cos 2x = 2 \sin^2 x - 1$$

$$2A = 1 + \cos 2x$$

$$a = (1 + \cos 2x) / 2$$

$$\cos 2x = 1 - 2 \sin^2 x$$

$$a = (\cos 2x - 1) / 2$$

выразить через $\cos 2x$

$$\sin^2 x = (1 - \cos 2x) / 2$$

$$\cos^2 x = (1 + \cos 2x) / 2$$

Формулы тройных углов

$$\sin 3x = \sin(x+2x) = \sin x \cdot \cos 2x + \sin 2x \cdot \cos x = \sin x \cdot (1 - 2 \sin^2 x) + (2 \sin x \cdot \cos x) \cdot \cos x = \sin x - 2 \sin^3 x + 2 \sin x \cdot \cos^2 x = \sin x - 2 \sin^3 x + 2 \sin x \cdot (1 - \sin^2 x) = \sin x - 2 \sin^3 x + 2 \sin x - 2 \sin^3 x =$$

$$= 3 \sin x - 4 \sin^3 x$$

$$\sin^3 x = (3 \sin x - \sin 3x) / 4$$

$$\cos 3x = \cos x \cdot \cos 2x - \sin 2x \cdot \sin x = \cos x \cdot (2 \cos^2 x - 1) - (2 \sin x \cdot \cos x) \cdot \sin x = 2 \cos^3 x - \cos x - 2 \sin^2 x \cdot \cos x = 2 \cos^3 x - \cos x - 2(1 - \cos^2 x) \cdot \cos x = 2 \cos^3 x - \cos x - 2 \cos x + 2 \cos^3 x =$$

$$= 4 \cos^3 x - 3 \cos x$$

$$\cos^3 x = (3 \cos x + \cos 3x) / 4$$