

$$\begin{aligned} \sin(x+y) &= \sin x \cdot \cos y + \sin y \cdot \cos x \\ \sin(x-y) &= \sin x \cdot \cos y - \sin y \cdot \cos x \\ \cos(x+y) &= \cos x \cdot \cos y - \sin y \cdot \sin x \\ \cos(x-y) &= \cos x \cdot \cos y + \sin y \cdot \sin x \\ \sin^2 x + \cos^2 x &= 1 \end{aligned}$$

Формулы двойных углов

$$\begin{aligned} \sin 2x &= \sin(x+x) = 2(\sin x \cdot \cos x) \\ \cos 2x &= \cos(x+x) = \cos^2(x) - \sin^2(x) \\ \cos 2x &= \cos^2(x) - \sin^2(x) = 1 - 2\sin^2(x) \\ \cos 2x &= \cos^2(x) - \sin^2(x) = 2\cos^2(x) - 1 \end{aligned}$$

Формулы понижения степени

$$\begin{aligned} \cos 2x &= 1 - 2\sin^2(x) \\ \cos 2x &= 2\cos^2(x) - 1 \\ \sin^2 x &= (1 - \cos 2x) / 2 \\ \cos^2 x &= (\cos 2x + 1) / 2 \end{aligned}$$

Формулы тройных углов

$$\begin{aligned} \sin 3x &= \sin(x+2x) = \sin x \cdot \cos 2x + \sin 2x \cdot \cos x = \sin x \cdot (1 - 2\sin^2(x)) + 2(\sin x \cdot \cos x) \cdot \cos x = \sin x - 2\sin^3(x) + 2\sin x \cdot \cos^2(x) = \sin x - 2\sin^3(x) + 2\sin x \cdot (1 - \sin^2(x)) = \sin x - 2\sin^3(x) + 2\sin x - 2\sin^3(x) = \\ &= 3\sin x - 4\sin^3(x) \\ \sin^3 x &= (3\sin x - \sin 3x) / 4 \\ \cos 3x &= \cos(x+2x) = \cos x \cdot \cos 2x - \sin x \cdot \sin 2x = \cos x \cdot (2\cos^2(x) - 1) - 2(\sin x \cdot \cos x) \cdot \sin x = 2\cos^3(x) - \cos x - 2\sin^2 x \cdot \cos x = 2\cos^3(x) - \cos x - 2(1 - \cos^2 x) \cdot \cos x = 2\cos^3(x) - \cos x - 2\cos x + 2\cos^3 x = \\ &= 4\cos^3 x - 3\cos x \\ \cos^3 x &= (\cos 3x + 3\cos x) / 4 \end{aligned}$$

$$\begin{aligned} 5 \cdot \cos(29) / \sin(61) &= 5 \cdot \cos(90 - 61) / \sin(61) = 5 \cdot (\cos 90 \cdot \cos 61 + \sin 90 \cdot \sin 61) / \sin(61) = \\ &= 5 \cdot \sin(61) / \sin(61) = 5 \end{aligned}$$

$$\begin{aligned} \sin(x-y) &= \sin x \cdot \cos(-y) + \sin(-y) \cdot \cos x = \\ &= \sin x \cdot \cos y - \sin y \cdot \cos x \end{aligned}$$

$$\sin(P/2 - x) = \sin(P/2) \cdot \cos x - \cos(P/2) \cdot \sin x = \cos x$$

$$\begin{aligned} \cos(x+y) &= \sin((P/2 - x) - y) = \sin(P/2 - x) \cdot \cos y - \\ &- \cos(P/2 - x) \cdot \sin y = \cos x \cdot \cos y - \sin x \cdot \sin y \end{aligned}$$

