Formules trigonométriques

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

$$\cos^2 x = \frac{1}{1 + \mathrm{tg}^2 x} \qquad \sin^2 x = \frac{\mathrm{tg}^2 x}{1 + \mathrm{tg}^2 x} \qquad 1 + \mathrm{tg}^2 x = \frac{1}{\cos^2 x}$$

$$\sin(\pi - x) = \sin x \qquad \sin(\pi + x) = -\sin x \qquad \sin(-x) = -\sin x$$
$$\cos(\pi - x) = -\cos x \qquad \cos(\pi + x) = -\cos x \qquad \cos(-x) = \cos x$$
$$\mathrm{tg}(\pi - x) = -\mathrm{tg}\, x \qquad \mathrm{tg}(\pi + x) = \mathrm{tg}\, x \qquad \mathrm{tg}(-x) = -\mathrm{tg}\, x$$

$$\sin(\tfrac{\pi}{2} - x) = \cos x \qquad \sin(\tfrac{\pi}{2} + x) = \cos x$$
$$\cos(\tfrac{\pi}{2} - x) = \sin x \qquad \cos(\tfrac{\pi}{2} + x) = -\sin x$$
$$\mathrm{tg}(\tfrac{\pi}{2} - x) = \mathrm{cotg}\, x \qquad \mathrm{tg}(\tfrac{\pi}{2} + x) = -\mathrm{cotg}\, x$$

$$\sin(x + y) = \sin x \cos y + \cos x \sin y$$
$$\sin(x - y) = \sin x \cos y - \cos x \sin y$$
$$\mathrm{tg}(x + y) = \frac{\mathrm{tg}\, x + \mathrm{tg}\, y}{1 - \mathrm{tg}\, x\, \mathrm{tg}\, y}$$
$$\cos(x + y) = \cos x \cos y - \sin x \sin y$$
$$\cos(x - y) = \cos x \cos y + \sin x \sin y$$
$$\mathrm{tg}(x - y) = \frac{\mathrm{tg}\, x - \mathrm{tg}\, y}{1 + \mathrm{tg}\, x\, \mathrm{tg}\, y}$$

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

$$\sin 2x = \frac{2\,\mathrm{tg}\, x}{1 + \mathrm{tg}^2 x} \qquad \cos 2x = \frac{1 - \mathrm{tg}^2 x}{1 + \mathrm{tg}^2 x} \qquad \mathrm{tg}\, 2x = \frac{2\,\mathrm{tg}\, x}{1 - \mathrm{tg}^2 x}$$

$$\sin 3x = 3 \sin x - 4 \sin^3 x \qquad \cos 3x = -3 \cos x + 4 \cos^3 x$$

$$\sin p + \sin q = 2 \sin \frac{p+q}{2} \cos \frac{p-q}{2}$$
$$\sin p - \sin q = 2 \sin \frac{p-q}{2} \cos \frac{p+q}{2}$$
$$\cos p + \cos q = 2 \cos \frac{p+q}{2} \cos \frac{p-q}{2}$$
$$\cos p - \cos q = -2 \sin \frac{p+q}{2} \sin \frac{p-q}{2}$$
$$\mathrm{tg}\, p + \mathrm{tg}\, q = \frac{\sin(p+q)}{\cos p \cos q}$$
$$\mathrm{tg}\, p - \mathrm{tg}\, q = \frac{\sin(p-q)}{\cos p \cos q}$$

$$\sin x \cos y = \tfrac{1}{2}[\sin(x+y) + \sin(x-y)]$$
$$\cos x \cos y = \tfrac{1}{2}[\cos(x+y) + \cos(x-y)]$$
$$\sin x \sin y = \tfrac{1}{2}[\cos(x-y) - \cos(x+y)]$$