Auswahl von Additionstheoremen der Winkelfunktionen

❶ $\sin(x) + \sin(y) = 2 \cdot \sin\left(\frac{x+y}{2}\right) \cdot \cos\left(\frac{x-y}{2}\right)$

❷ $\cos(x) + \cos(y) = 2 \cdot \cos\left(\frac{x+y}{2}\right) \cdot \cos\left(\frac{x-y}{2}\right)$

❸ $\sin(x) - \sin(y) = 2 \cdot \cos\left(\frac{x+y}{2}\right) \cdot \sin\left(\frac{x-y}{2}\right)$

❹ $\cos(x) - \cos(y) = -2 \cdot \sin\left(\frac{x+y}{2}\right) \cdot \sin\left(\frac{x-y}{2}\right)$

❺ $\sin(x \pm y) = \sin(x) \cdot \cos(y) \pm \cos(x) \cdot \sin(y)$

❻ $\cos(x \pm y) = \cos(x) \cdot \cos(y) \mp \sin(x) \cdot \sin(y)$

❼ $\tan(x \pm y) = \frac{\tan(x) \pm \tan(y)}{1 \mp \tan(x) \cdot \tan(y)} = \frac{\sin(x \pm y)}{\cos(x \pm y)}$

❽ $\cot(x \pm y) = \frac{\cot(x) \cdot \cot(y) \mp 1}{\cot(x) \pm \cot(y)} = \frac{\cos(x \pm y)}{\sin(x \pm y)}$

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

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

Gegenseitige Darstellung

$\cos(x) = \sin(x + \frac{\pi}{2})$ und $\tan(x) = \frac{\sin(x)}{\cos(x)}$

Trigonometrischer Pythagoras: $\sin^2(x) + \cos^2(x) = 1$

Sinussatz im beliebigen Dreieck

$$\frac{a}{\sin(\alpha)} = \frac{b}{\sin(\beta)} = \frac{c}{\sin(\gamma)}$$

Kosinussatz im beliebigen Dreieck

$$a^2 = b^2 + c^2 - 2bc \cdot cos(\alpha)$$
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