

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

$$\begin{aligned}\sin a + \sin b &= \text{????} \\ \sin a - \sin b &= \text{????} \\ \cos a + \cos b &= \text{????} \\ \cos a - \cos b &= \text{????}\end{aligned}$$

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

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

$$\begin{aligned}x+y &= a \\ x-y &= b\end{aligned}$$

$$\begin{aligned}2x &= a+b & x &= (a+b)/2 \\ 2y &= a-b & y &= (a-b)/2\end{aligned}$$

$$\sin a + \sin b = 2 \sin(a+b)/2 \cos(a-b)/2$$

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

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

$$\begin{aligned}x+y &= a \\ x-y &= b\end{aligned}$$

$$\begin{aligned}2x &= a+b & x &= (a+b)/2 \\ 2y &= a-b & y &= (a-b)/2\end{aligned}$$

$$\sin a - \sin b = 2 \cos(a+b)/2 \sin(a-b)/2$$

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

$$\begin{aligned}x+y &= a \\ x-y &= b\end{aligned}$$

$$\begin{aligned}2x &= a+b & x &= (a+b)/2 \\ 2y &= a-b & y &= (a-b)/2\end{aligned}$$

$$\cos a + \cos b = 2 \cos(a+b)/2 \cos(a-b)/2$$

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

$$\begin{aligned}x+y &= a \\ x-y &= b\end{aligned}$$

$$\begin{aligned}2x &= a+b & x &= (a+b)/2 \\ 2y &= a-b & y &= (a-b)/2\end{aligned}$$

$$\cos a - \cos b = -2 \sin(a+b)/2 \sin(a-b)/2$$

$$\begin{aligned}\sin a + \sin b &= 2 \sin(a+b)/2 \cos(a-b)/2 \\ \sin a - \sin b &= 2 \cos(a+b)/2 \sin(a-b)/2 \\ \cos a + \cos b &= 2 \cos(a+b)/2 \cos(a-b)/2 \\ \cos a - \cos b &= -2 \sin(a+b)/2 \sin(a-b)/2\end{aligned}$$