$\operatorname{sen}(-\theta) = -\operatorname{sen}(\theta)$ → Impar

$\cos(-\theta) = \cos(\theta)$ → par

$\operatorname{sen}(x+y) = \operatorname{sen}x\cos y + \operatorname{sen}y\cos x$

$\cos(x+y) = \cos x\cos y - \operatorname{sen}x\operatorname{sen}y$

$\operatorname{sen}(x+y) + \operatorname{sen}(x-y) = 2\operatorname{sen}x\cos y$

$\operatorname{sen}(x+y) - \operatorname{sen}(x-y) = 2\operatorname{sen}y\cos x$

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

$\cos(x+y) - \cos(x-y) = -2\operatorname{sen}x\operatorname{sen}y$

$x+y = p$

$x-y = q$

$\Rightarrow \quad x = \frac{p+q}{2}, \quad y = \frac{p-q}{2}$

$$\operatorname{sen}p + \operatorname{sen}q = 2\operatorname{sen}\frac{p+q}{2}\cdot\cos\frac{p-q}{2}$$

$$\operatorname{sen}p - \operatorname{sen}q = 2\operatorname{sen}\frac{p-q}{2}\cdot\cos\frac{p+q}{2}$$

$$\cos p + \cos q = 2\cos\frac{p+q}{2}\cos\frac{p-q}{2}$$

$$\cos p - \cos q = -2\operatorname{sen}\frac{p+q}{2}\operatorname{sen}\frac{p-q}{2}$$

✷ $\operatorname{sen}a + \operatorname{sen}b + \operatorname{sen}c - \operatorname{sen}(a+b+c) = 4\cdot\operatorname{sen}\frac{a+b}{2}\cdot\operatorname{sen}\frac{a+c}{2}\cdot\operatorname{sen}\frac{b+c}{2}$

✷ $\operatorname{sen}a + \operatorname{sen}b = 2\operatorname{sen}\frac{a+b}{2}\cdot\cos\frac{a-b}{2}$

$\frac{a+b+c+c}{2}$

✷ $\operatorname{sen}c - \operatorname{sen}(a+b+c) = 2\operatorname{sen}\left(\frac{-a-b}{2}\right)\cos\left(\frac{a+b+2c}{2}\right)$

$= -2\operatorname{sen}\frac{a+b}{2}\cdot\cos\frac{a+b+2c}{2}$

$$\operatorname{sen}a + \operatorname{sen}b + \operatorname{sen}c - \operatorname{sen}(a+b+c) = 2\operatorname{sen}\frac{a+b}{2}\left[\cos\frac{a-b}{2} - \cos\frac{a+b+2c}{2}\right]$$

(p = $\frac{a-b}{2}$, q = $\frac{a+b+2c}{2}$)

$= 2\operatorname{sen}\frac{a+b}{2}\cdot(-2)\operatorname{sen}\frac{a+c}{2}\cdot\operatorname{sen}\frac{-b-c}{2}$

$$= 4\operatorname{sen}\frac{a+b}{2}\cdot\operatorname{sen}\frac{a+c}{2}\cdot\operatorname{sen}\frac{b+c}{2}$$

$p+q = \frac{a-b}{2} + \frac{a+b+2c}{2}$

$= \frac{2a+2c}{2} = a+c$

$p-q = \frac{a-b}{2} - \frac{a+b+2c}{2}$

$= \frac{-2b-2c}{2} = -b-c$