potencias y raíces

$$a^b \cdot a^c = a^{b+c}$$
$$\frac{a^b}{a^c} = a^{b-c}$$
$$\left(a^b\right)^c = a^{b\cdot c}$$
$$a^{-b} = \frac{1}{a^b}$$

$$a^{\frac{b}{c}} = \sqrt[c]{a^b}$$
$$\sqrt{a\cdot b} = \sqrt{a}\cdot\sqrt{b}$$
$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$
$$\sqrt{a\pm b} \neq \sqrt{a}\pm\sqrt{b}$$

logaritmos

$$\log_a b = c \quad \leftrightarrow \quad a^c = b$$
$$\log\left(a\cdot b\right) = \log a + \log b$$
$$\log\left(\frac{a}{b}\right) = \log a - \log b$$
$$\log\left(a^b\right) = b\cdot\log a$$
$$\log_a b = \frac{\log_c b}{\log_c a}$$

trigonometría

básicas

$$\operatorname{sen}^2\alpha + \cos^2\alpha = 1$$
$$\operatorname{tg}\alpha = \frac{\operatorname{sen}\alpha}{\cos\alpha}$$
$$1+\operatorname{tg}^2\alpha = \frac{1}{\cos^2\alpha}$$

ángulo doble

$$\operatorname{sen}2\alpha = 2\operatorname{sen}\alpha\cdot\cos\alpha$$
$$\cos2\alpha = \cos^2\alpha - \operatorname{sen}^2\alpha$$
$$\operatorname{tg}2\alpha = \frac{2\operatorname{tg}\alpha}{1-\operatorname{tg}^2\alpha}$$

ángulo mitad

$$\operatorname{sen}\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{2}}$$
$$\cos\frac{\alpha}{2} = \pm\sqrt{\frac{1+\cos\alpha}{2}}$$
$$\operatorname{tg}\frac{\alpha}{2} = \pm\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}}$$

ángulo suma

$$\operatorname{sen}\left(\alpha+\beta\right) = \operatorname{sen}\alpha\cdot\cos\beta + \cos\alpha\cdot\operatorname{sen}\beta$$
$$\cos\left(\alpha+\beta\right) = \cos\alpha\cdot\cos\beta - \operatorname{sen}\alpha\cdot\operatorname{sen}\beta$$
$$\operatorname{tg}\left(\alpha+\beta\right) = \frac{\operatorname{tg}\alpha+\operatorname{tg}\beta}{1-\operatorname{tg}\alpha\cdot\operatorname{tg}\beta}$$

ángulo resta

$$\operatorname{sen}\left(\alpha-\beta\right) = \operatorname{sen}\alpha\cdot\cos\beta - \cos\alpha\cdot\operatorname{sen}\beta$$
$$\cos\left(\alpha-\beta\right) = \cos\alpha\cdot\cos\beta + \operatorname{sen}\alpha\cdot\operatorname{sen}\beta$$
$$\operatorname{tg}\left(\alpha-\beta\right) = \frac{\operatorname{tg}\alpha-\operatorname{tg}\beta}{1+\operatorname{tg}\alpha\cdot\operatorname{tg}\beta}$$

suma y resta de razones

$$\operatorname{sen}\alpha+\operatorname{sen}\beta = 2\cdot\operatorname{sen}\frac{\alpha+\beta}{2}\cdot\cos\frac{\alpha-\beta}{2}$$
$$\operatorname{sen}\alpha-\operatorname{sen}\beta = 2\cdot\cos\frac{\alpha+\beta}{2}\cdot\operatorname{sen}\frac{\alpha-\beta}{2}$$
$$\cos\alpha+\cos\beta = 2\cdot\cos\frac{\alpha+\beta}{2}\cdot\cos\frac{\alpha-\beta}{2}$$
$$\cos\alpha-\cos\beta = -2\cdot\operatorname{sen}\frac{\alpha+\beta}{2}\cdot\operatorname{sen}\frac{\alpha-\beta}{2}$$
$$\operatorname{tg}\alpha+\operatorname{tg}\beta = \frac{\operatorname{sen}(\alpha+\beta)}{\cos\alpha\cdot\cos\beta}\ ;\ \operatorname{tg}\alpha-\operatorname{tg}\beta = \frac{\operatorname{sen}(\alpha-\beta)}{\cos\alpha\cdot\cos\beta}$$

producto de razones

$$\operatorname{sen}\alpha\cdot\operatorname{sen}\beta = \frac{1}{2}\left(\cos\left(\alpha-\beta\right)-\cos\left(\alpha+\beta\right)\right)$$
$$\cos\alpha\cdot\cos\beta = \frac{1}{2}\left(\cos\left(\alpha-\beta\right)+\cos\left(\alpha+\beta\right)\right)$$
$$\operatorname{sen}\alpha\cdot\cos\beta = \frac{1}{2}\left(\operatorname{sen}\left(\alpha+\beta\right)+\operatorname{sen}\left(\alpha-\beta\right)\right)$$
$$\cos\alpha\cdot\operatorname{sen}\beta = \frac{1}{2}\left(\operatorname{sen}\left(\alpha+\beta\right)-\operatorname{sen}\left(\alpha-\beta\right)\right)$$