

EJERCICIOS DE ECUACIONES TRIGONOMÉTRICAS

1. Resuelve las siguientes ecuaciones:

A) $2\operatorname{tg} x - 3\operatorname{cotg} x - 1 = 0$

$$2\operatorname{tg} x - \frac{3}{\operatorname{tg} x} - 1 = 0$$

$$2\operatorname{tg}^2 x - \operatorname{tg} x - 3 = 0$$

$$\operatorname{tg} x = \frac{1 \pm \sqrt{1+24}}{4} = \frac{1 \pm 5}{4}$$

$$\operatorname{tg} x = \frac{3}{2}$$

$$x = 56^\circ 18' 35'' + 180^\circ k$$

$$\operatorname{tg} x = -1$$

$$x = 135^\circ + 180^\circ k$$

B) $\operatorname{sen}^2 x - \cos^2 x = \frac{1}{2}$

$$\operatorname{sen}^2 x - \cos^2 x = \frac{1}{2}$$

$$\cos^2 x - \operatorname{sen}^2 x = -\frac{1}{2}$$

$$\cos 2x = -\frac{1}{2}$$

$$2x = \begin{cases} 120^\circ + 360^\circ k \\ 240^\circ + 360^\circ k \end{cases} \Rightarrow x = \begin{cases} 60^\circ + 180^\circ k \\ 120^\circ + 180^\circ k \end{cases}$$

C) $\text{sen } x + \sqrt{3} \cos x = 2$

$$\text{sen } x + \sqrt{3} \cos x = 2 \qquad \frac{1}{2} \text{sen } x + \frac{\sqrt{3}}{2} \cos x = 1$$

$$\text{sen}(x + 60^\circ) = 1 \qquad x + 60^\circ = 90^\circ + 360^\circ k$$

$$x = 30^\circ + 360^\circ k$$

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