

Resuelve:

a) $\text{sen } x + \cos 2x = 1$

$$\text{sen } x + \cos^2 x - \text{sen}^2 x = 1$$

$$\text{sen } x + 1 - \text{sen}^2 x - \text{sen}^2 x = 1$$

$$2 \text{sen}^2 x - \text{sen } x = 0$$

$$\text{sen } x (2 \text{sen } x - 1) = 0$$

hay dos soluciones:

$$\text{sen } x = 0 \Rightarrow x = k \cdot 180^\circ \quad (k = 0, 1, 2, \dots)$$

$$2 \text{sen } x = 1 \Rightarrow \text{sen } x = \frac{1}{2} \Rightarrow x = \begin{array}{l} = 30^\circ + k \cdot 360^\circ \quad (k = 1, 2, 3) \\ = 150^\circ + k \cdot 360^\circ \quad (k = 1, 2, 3, \dots) \end{array}$$

b) $\cos^2 x = \cos x$ Hay dos soluciones:

$$\cos x = 0 \Rightarrow x = k \cdot 180^\circ \quad (k = 0, 1, 2, \dots)$$

$$\cos x = 1 \Rightarrow x = 90^\circ + k \cdot 180^\circ \quad (k = 1, 2, 3, \dots)$$

c) $2 \cos x = \sec x$

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

$$2 \cos^2 x = 1 \Rightarrow \cos x = \frac{\sqrt{2}}{2} \Rightarrow x = \begin{array}{l} = 45^\circ + k \cdot 360^\circ \quad (k = 1, 2, \dots) \\ = 315^\circ + k \cdot 360^\circ \quad (k = 1, 2, \dots) \end{array}$$

$$d) 3 \operatorname{tg}^2 x = \sec^2 x + 1$$

$$3 \cdot \frac{\operatorname{sen}^2 x}{\cos^2 x} = \frac{1}{\cos^2 x} + 1$$

$$3 \operatorname{sen}^2 x = 1 + \cos^2 x = 1 + 1 - \operatorname{sen}^2 x$$

$$4 \operatorname{sen}^2 x = 2 \Rightarrow \operatorname{sen}^2 x = \frac{1}{2} \quad \operatorname{sen} x = \frac{\sqrt{2}}{2} \Rightarrow$$

$$\Rightarrow x = 45^\circ + k \cdot 360^\circ (k=1, 2, \dots)$$

$$= 135^\circ + k \cdot 360^\circ (k=1, 2, \dots)$$

$$e) \cos 2x + 5 \cos^2 x = 5$$

$$\cos^2 x - \operatorname{sen}^2 x + 5 \cos^2 x = 5$$

$$\cos^2 x - 1 + \cos^2 x + 5 \cos^2 x = 5$$

$$7 \cos^2 x = 6 \Rightarrow \cos^2 x = \frac{6}{7} \Rightarrow \cos x = \sqrt{\frac{6}{7}}$$

$$x = 22,20^\circ + k \cdot 360^\circ (k=1, 2, \dots)$$

$$= 337,80^\circ + k \cdot 360^\circ (k=1, 2, \dots)$$