OBSERVEM $2x+60^\circ = 2(x+30^\circ)$

L'equació queda:

$$2\sin(x+30^\circ)\cos(x+30^\circ)+\sin(x+30^\circ)=0$$

Treiem factor comú de $\sin(x+30^\circ)$

$$\sin(x+30^\circ)\left[2\cos(x+30^\circ)+1\right]=0 \iff$$

$$\iff \begin{cases} \sin(x+30^\circ)=0 \iff x=150^\circ+180^\circ K \quad K\in\mathbb{Z} \\ \text{ó} \\ 2\cos(x+30^\circ)=-1 \iff \cos(x+30^\circ)=-\frac{1}{2} \iff \end{cases}$$

$$\iff \begin{cases} x=90^\circ+360^\circ K \\ x=210^\circ+360^\circ K \end{cases} \quad K\in\mathbb{Z}$$

m) $\sin x+\sqrt{3}\cos x=2$

Tenim que $\sin^2 x = 1-\cos^2 x$

$\sin x = \pm\sqrt{1-\cos^2 x}$

$$\pm\sqrt{1-\cos^2 x} = 2-\sqrt{3}\cos x$$

Elevem al quadrat els 2 termes de l'eq:

$$1-\cos^2 x = 4-4\sqrt{3}\cos x+3\cos^2 x$$

$$4\cos^2 x-4\sqrt{3}\cos x+3=0$$

$$\cos x = \frac{4\sqrt{3}\pm\sqrt{16\cdot 3-16\cdot 3}}{8}=\frac{\sqrt{3}}{2}$$

Per tant

$$\begin{cases} x=\frac{\pi}{6}+2K\pi \\ \text{ó} \\ x=\frac{11\pi}{6}+2K\pi \end{cases}$$

Cal comprovar si les dues solucions