$$\sin 2x+\sin 4x+\sin 6x=0$$
$$2\sin 4x\cos 2x+\sin 4x=0$$
$$\sin 4x\left(2\cos 2x+1\right)=0$$
$$\left[\begin{array}{l}\sin 4x=0\\ \cos 2x=-0.5\end{array}\right.$$
$$\left[\begin{array}{l}4x=\pi k, k\in\mathbb{Z}\\ 2x=2\pi/3+2\pi k, k\in\mathbb{Z}\\ 2x=4\pi/3+2\pi k, k\in\mathbb{Z}\end{array}\right.$$
$$\left[\begin{array}{l}x=\pi k/4, k\in\mathbb{Z}\\ x=\pi/3+\pi k, k\in\mathbb{Z}\\ x=2\pi/3+\pi k, k\in\mathbb{Z}\end{array}\right.$$

$$\tan x+\cos x=0$$
$$\sin x+\cos^2 x=0$$
$$\sin^2 x-\sin x-1=0$$
$$\sin x=\frac{1-\sqrt{5}}{2}$$
$$x=\arcsin\left(\frac{1-\sqrt{5}}{2}\right)$$