8. $\tan(2x) - 2\cos x = 0$

$$\frac{2\tan x}{1-\tan^2 x} - 2\cos x = 0$$

$$(1-\tan^2 x)\left(\frac{2\tan x}{1-\tan^2 x}\right) - 2\cos x\,(1-\tan^2 x) = 0\,(1-\tan^2 x)$$

$$2\tan x - 2\cos x + 2\cos x \tan^2 x = 0$$

$$\tan x - \cos x + \cos x \tan^2 x = 0$$

$$\frac{\sin x}{\cos x} - \cos x + \cos x \cdot \frac{\sin^2 x}{\cos^2 x} = 0$$

$$\frac{\sin x}{\cos x} - \cos x + \frac{\sin^2 x}{\cos x} = 0$$

$$\sin x - \cos^2 x + \sin^2 x = 0$$

$$\sin x - (1-\sin^2 x) + \sin^2 x = 0$$

$$\sin x - 1 + \sin^2 x + \sin^2 x = 0$$

$$2\sin^2 x + \sin x - 1 = 0$$

$$(2\sin x - 1)(\sin x + 1) = 0$$

$2\sin x - 1 = 0$ $\qquad$ $\sin x + 1 = 0$

$2\sin x = 1$

$\sin x = \frac{1}{2}$ $\qquad$ $\sin x = -1$

$x = \frac{\pi}{6}, \frac{5\pi}{6}$ $\qquad$ $x = \frac{3\pi}{2}$