2.48
k)

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

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

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

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

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

$$2\cos x - 1 = 2(\cos x - \sin x)$$

$$-1 = -2\sin x$$

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

$$x = \frac{\pi}{6} + 2\pi k$$

$$x = \frac{5\pi}{6} + 2\pi k$$

$\sin x = \cos x$

$\tan x = 1$

$$x = \frac{\pi}{4} + \pi k$$