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$$\tan x - \sin x = 3 \tan x \sin x$$

$$\frac{\sin x}{\cos x} - \sin x = 3 \frac{\sin x}{\cos x} \cdot \sin x / \cos x$$

$$\sin x - \sin x \cos x = 3 \sin^2 x \quad | - 3 \sin^2 x$$

$$\sin x (1 - \cos x - 3 \sin x) = 0$$

$$\sin x = 0$$

$$x = 180k$$

$$1 = \cos x + 3 \sin x$$

$$1 = \cos x + \tan \alpha \sin x$$

$$1 = \cos x + \frac{\sin \alpha}{\cos \alpha} \sin x \quad | \cdot \cos \alpha$$

$$3 = \tan \alpha$$

$$\alpha = 71.56$$

$$\cos \alpha = \cos x \cos \alpha + \sin \alpha \sin x$$

$$\cos \alpha = \cos(x - \alpha)$$

$$\alpha = x - \alpha + 360k$$

$$\alpha = -(x - \alpha) + 360k$$

$$2\alpha + 360k = x$$

$$x = 360k$$

$$x = 143.13 + 360^\circ k$$

$$11 \quad \tan \alpha = \frac{3}{2} \quad \tan \beta = \frac{2}{3}$$

$$\tan(\alpha - \beta) = \frac{\tan \alpha - \tan \beta}{1 + \tan \alpha \cdot \tan \beta} = \frac{\frac{3}{2} - \frac{2}{3}}{1 + \frac{3}{2} \cdot \frac{2}{3}} = \frac{5}{12}$$

$$\tan(\alpha + \beta) = \frac{\tan \alpha + \tan \beta}{1 - \tan \alpha \cdot \tan \beta} = \frac{\frac{3}{2} + \frac{2}{3}}{1 - 1} = \text{אי אפשר}$$

$$\dots, 90, 270, 450, \dots \leftarrow x = 90 + 180k \quad \tan \text{ אי אפשר}$$

$$360 < \alpha + \beta < 540 \quad \text{אם } \alpha - \beta \text{ בין } 180 \text{ ו-} 270 \text{ אז } \alpha + \beta < 360$$

$$\alpha + \beta = 450 \quad \text{האקרה החיפה של האקרה זה } 450, 135$$

$$19 \quad \cos(\alpha + \beta) = 0 \leftrightarrow \alpha + \beta = 90$$

$$\alpha + \beta = 90$$

$$\alpha = 90 - \beta$$

(*)

$$\cos \alpha = \cos(90 - \beta) = \sin \beta \quad , \quad \sin \alpha = \sin(90 - \beta) = \cos \beta$$

$$\underline{\sin(\alpha + 2\beta)} = \sin \alpha \cos 2\beta + \cos \alpha \sin 2\beta = \sin \alpha \cos 2\beta + \sin \beta \cdot \sin 2\beta =$$

$$\sin \alpha (1 - 2 \sin^2 \beta) + \sin \beta \cdot 2 \sin \beta \cos \beta =$$

$$\sin \alpha - 2 \sin \alpha \sin^2 \beta + 2 \sin^2 \beta \cos \beta =$$

$$\sin \alpha - 2 \sin^2 \beta (\sin \alpha - \cos \beta) = \underline{\sin \alpha}$$

0 (*)