

Pg. 46

$$\begin{aligned} 7) \quad \csc 2x &= \frac{\csc x}{2 \cos x} \\ \Rightarrow \frac{1}{\sin 2x} &= \frac{1}{2 \sin x \cos x} \\ &= \frac{1}{\sin 2x} \quad \checkmark \end{aligned}$$

Pg. 44

$$b) \left( \sin \frac{11\pi}{6} - \tan \frac{5\pi}{6} \right) \left( \sin \frac{11\pi}{6} + \tan \frac{5\pi}{6} \right)$$

$$\left( -\frac{1}{2} - \frac{\sqrt{3}}{3} \right) \left( -\frac{1}{2} + \frac{\sqrt{3}}{3} \right)$$

$$= \frac{1}{4} - \frac{3}{9} = \frac{-3}{36} = \left( -\frac{1}{12} \right)$$

$$\tan = \frac{\sin}{\cos}$$

$$= \frac{y}{x}$$

$$\therefore \frac{1}{6} = \left( \frac{\sqrt{3}}{2}, \frac{1}{2} \right)$$

$$\frac{1}{2} \cdot \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

Pg. 4.8

Solve:  $(0, 2\pi)$

$$X = \tan X$$

$$2) \quad 3 \tan^3 X = \tan X$$

$$3X^3 = X$$

$-x \quad -x$

$$3x^3 - x = 0$$

$$3 \tan^3 X - \tan X = 0$$

$$\tan X (3 \tan^2 X - 1) = 0$$

$$\tan X = 0$$

$$X = 0, \pi$$

$$\sqrt{3 \tan^2 X} = \sqrt{\frac{1}{3}}$$
$$\tan X = \pm \frac{1}{\sqrt{3}}$$

$$= \pm \frac{1}{\sqrt{3}} = \pm \frac{\sqrt{3}}{3}$$
$$\Rightarrow X = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$$

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$(0, 2\pi)$

$$4) \cos x + \sin x \tan x = 2$$

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

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

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

$$x = \frac{\pi}{3}, \frac{5\pi}{3}$$

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$$3) \frac{\sin^2 x}{\cos^2 x} = \frac{3\cos^2 x}{\cos^2 x}$$

$$\sqrt{\tan^2 x} = \sqrt{3}$$

$$\tan x = \pm\sqrt{3}$$

$$x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$$

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$$4) \frac{1}{1+\tan x} + \frac{1}{1+\cot x} = 1$$

$$= \frac{1}{1 + \frac{\sin x}{\cos x}} + \frac{1}{1 + \frac{\cos x}{\sin x}}$$

$$= \frac{\cos x + \sin x}{\cos x} + \frac{\sin x + \cos x}{\sin x} = \frac{\cos x}{\cos x + \sin x} + \frac{\sin x}{\sin x + \cos x} = 1$$

$$\frac{\cos x + \sin x}{\cos x + \sin x} = 1 \quad \checkmark$$

Last pg.

$$57) \cos[2x] = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

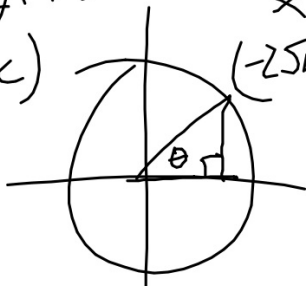
$$2x = \frac{\pi}{4}, \quad 2x = \frac{7\pi}{4}$$

$$x = \frac{\pi}{8}, \quad x = \frac{7\pi}{8}$$

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Soh Cah Tua

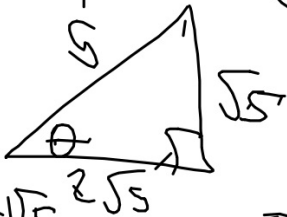
(c)  $(-2\sqrt{5}, \sqrt{5})$



$$(\sqrt{5})^2 + (2\sqrt{5})^2 = c^2$$

$$5 + 20 = c^2$$

$$5 = c$$



$$\sin \theta = \frac{\sqrt{5}}{5}$$

$$\csc \theta = \frac{5}{\sqrt{5}} = \frac{\sqrt{5}}{1} = \sqrt{5}$$

$$\cos \theta = \frac{2\sqrt{5}}{5}$$

$$\sec \theta = \frac{5}{2\sqrt{5}} = \frac{\sqrt{5}}{2}$$

$$\tan \theta = \frac{\sqrt{5}}{2\sqrt{5}} = \frac{1}{2}$$

$$\cot \theta = 2$$



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$$3) \cot 135^\circ - \sin 210^\circ + 5 \cos^2 225^\circ$$

$$\frac{\sqrt{2}}{2} - \left(-\frac{1}{2}\right) + 5\left(\frac{\sqrt{2}}{2}\right)^2$$

$$\frac{\sqrt{2}}{2} + \frac{1}{2} + \frac{5}{2}$$

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