

<u>Principal values</u>	$0^\circ \leq x < 360^\circ$
$0 \leq x < 2\pi$	for all real values of x (use radians)

ex 1 Principal values $\sin/\tan \quad -90^\circ \leq x \leq 90^\circ$
 $\cos \quad 0 \leq x \leq 180^\circ$

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

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

$$\cos x = 0$$

$$x = 90^\circ$$

$$\sin x - \frac{1}{2} = 0$$

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

$$x = 30^\circ$$

$$0 \leq x < 360^\circ$$

Solve $\cos^2 x - \cos x + 1 = \sin^2 x$

$$\begin{array}{rcl} \cos^2 x & - \cos x & + 1 \\ + \cos^2 x & - 1 & - 1 \end{array} = \begin{array}{r} 1 \\ - \cos^2 x \\ + \cos^2 x \end{array}$$

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

$$\cos x (2\cos x - 1) = 0$$

$$\cos x = 0 \quad 2\cos x - 1 = 0$$

$$x = 90^\circ, 270^\circ \quad \cos x = \frac{1}{2}$$

$$x = 60^\circ, 300^\circ$$

$$60, 90, 270, 300$$

Solve $2 \sec^2 x - \tan^4 x = -1$

$$0 \leq x < 360^\circ$$

$$2(\tan^2 x + 1) - \tan^4 x = -1$$

$$\begin{array}{rcl} 2\tan^2 x & + 2 & - \tan^4 x \\ + 1 & & + 1 \end{array} = -1$$

$$\begin{array}{rcl} 2\tan^2 x & + 3 & - \tan^4 x \\ - 1 & & \end{array} = 0$$

$$\tan^4 x - 2\tan^2 x - 3 = 0$$

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

$$\tan^2 x + 1 = 0 \quad \tan^2 x - 3 = 0$$

$$\tan^2 x = -1$$

$$\tan^2 x = 3$$

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

$$x = 60^\circ, 120^\circ, 240^\circ, 300^\circ$$

$$0 \leq x < 360^\circ$$

$$7. \sin x \cot x = \frac{\sqrt{3}}{2}$$

$$\cancel{\sin x} \frac{\cos x}{\cancel{\sin x}} = \frac{\sqrt{3}}{2}$$

$$\cos x = \frac{\sqrt{3}}{2}$$

$$x = 30^\circ, 330^\circ$$

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