

Solve each equation over the interval  $[0^\circ, 360^\circ)$ . If necessary, round answers to the nearest hundredths.

$$1.) \quad \cos 2x = \frac{-\sqrt{3}}{2}$$

$$2x = 150$$

$$x = 75^\circ$$

$$2x = 510$$

$$x = 255^\circ$$

$$2x = 210$$

$$x = 105^\circ$$

$$2x = 570$$

$$x = 285^\circ$$

$$2.) \quad -3 \cot 2x = \sqrt{3}$$

$$\cot 2x = -\frac{\sqrt{3}}{3} \quad \tan 2x = -\frac{1}{\sqrt{3}}$$

$$2x = 120$$

$$x = 60^\circ$$

$$2x = 300$$

$$x = 150^\circ$$

$$2x = 480$$

$$x = 240^\circ$$

$$2x = 660$$

$$x = 330^\circ$$

$$3.) \quad 2 \sin \frac{x}{3} + \sqrt{3} = 0$$

$$\sin \frac{x}{3} = -\frac{\sqrt{3}}{2}$$

$$\frac{x}{3} = 240$$

$$\frac{x}{3} = 300$$

$$x = 720$$

no solutions

$$4.) \quad 3 \cos 2x = 4 \cos 2x$$

$$0 = \cos 2x$$

$$2x = 90$$

$$x = 45^\circ$$

$$2x = 270$$

$$x = 135^\circ$$

$$2x = 450$$

$$x = 225^\circ$$

$$2x = 630$$

$$x = 315^\circ$$

Solve each equation over the interval  $[0, 2\pi)$ . If necessary, round answers to the nearest hundredths.

5.)  $\cos \frac{x}{2} - 1 = 0$

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

$\frac{x}{2} = 0$

$x = 0$

~~$\frac{x}{2} = \frac{2\pi}{3}$~~

~~$x = \frac{4\pi}{3}$~~

6.)  $\sqrt{2} \frac{\csc}{\sec} 3x = \sqrt{2}$

$\csc 3x = 1$

$\sin 3x = 1$

$\frac{1}{3} \cdot 3x = \frac{\pi}{2}$

$x = \frac{\pi}{6}$

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

$x = \frac{5\pi}{6}$

$3x = \frac{9\pi}{2}$

$x = \frac{9\pi}{6} = x = \frac{3\pi}{2}$

$3x = \frac{13\pi}{2}$

~~$x = \frac{13\pi}{6}$~~

oops =

+2π

+2π

7.)  $\sec 4x - 2 = 0$

$\sec 4x = 2$

$\cos 4x = \frac{1}{2}$

$4x = \frac{\pi}{3}$

$x = \frac{\pi}{12}$

$4x = \frac{7\pi}{3}$

$x = \frac{7\pi}{12}$

$4x = \frac{13\pi}{3}$

$x = \frac{13\pi}{12}$

$4x = \frac{19\pi}{3}$

$x = \frac{19\pi}{12}$

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

$x = \frac{5\pi}{12}$

$4x = \frac{11\pi}{3}$

$x = \frac{11\pi}{12}$

$4x = \frac{17\pi}{3}$

$x = \frac{17\pi}{12}$

$4x = \frac{23\pi}{3}$

$x = \frac{23\pi}{12}$

8.)  $\cot 3x = \sqrt{3}$

$3x = \frac{\pi}{6}$

$x = \frac{\pi}{18}$

$3x = \frac{13\pi}{6}$

$x = \frac{13\pi}{18}$

$3x = \frac{25\pi}{6}$

$x = \frac{25\pi}{18}$

$3x = \frac{7\pi}{6}$

$x = \frac{7\pi}{18}$

$3x = \frac{19\pi}{6}$

$x = \frac{19\pi}{18}$

$3x = \frac{31\pi}{6}$

$x = \frac{31\pi}{18}$