

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

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

$$2 \cdot \frac{1}{2} \sec x = 1 \cdot 2$$

$$\sec x = 2$$

S	A
T	C

$$x = \pi/3, 5\pi/3$$

3.) $2 \cot x = \cot x$

$$\frac{x}{y} \rightarrow 0 \quad \cot x = 0$$

$$x = \pi/2, 3\pi/2$$

5.) $3 \csc x + 1 = 0$

$$\csc x = -1/3$$

$$\sin x = -3$$

NO solution

2.) $11 \cos^2 x - 3 = 2 \cos^2 x + 1$

$$9 \cos^2 x = 4$$

$$\sqrt{\cos^2 x} = \sqrt{4/9}$$

$$\cos x = \pm 2/3$$

$$x' = .84$$

$$x = .84, 2.30, 3.98, 5.44$$

4.) $\sin x - 2 = 6 \sin x - 1$

$$-1 = 5 \sin x$$

$$\sin x = -1/5$$

$$x' = .20$$

S	A
T	C

$$x = 3.34, 6.08$$

6.) $3 \tan^2 x + 4 = 5$

$$3 \tan^2 x = 1$$

$$\sqrt{\tan^2 x} = \sqrt{1/3}$$

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

$$x = \pi/6, 5\pi/6, 7\pi/6, 11\pi/6$$

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

7.) $3 \tan x + 4 = 10$

$$3 \tan x = 6$$

$$\tan x = 2$$

$$x' = 63.43^\circ$$

$$x = 63.43^\circ, 243.43^\circ$$



8.) $\sin^2 x = 1 - \sin^2 x$

$$2 \sin^2 x = 1$$

$$\sqrt{\sin^2 x} = \sqrt{1/2}$$

$$\sin x = \pm \sqrt{2}/2$$

$$x = 45^\circ, 135^\circ, 225^\circ, 315^\circ$$

9.) $\sec x + 10 = 2$

$$\sec x = -8$$

$$\cos x = -1/8$$

$$x' = 82.82^\circ$$

$$x = 97.18^\circ, 262.82^\circ$$



10.) $-\csc x - 4 = \csc x$

$$-2 \csc x = 4$$

$$\csc x = -2$$

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

$$x = 210^\circ, 330^\circ$$



11.) $3 \cos x + 1 = 5 \cos x + 2$

$$-1 = 2 \cos x$$

$$\cos x = -1/2$$

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



12.) $\tan x - 2 = -9$

$$\tan x = -7$$

$$x' = 81.87^\circ$$

$$x = 98.13^\circ, 278.13^\circ$$

