Solving Trigonometric Equations

Find all solutions of the equation in the given interval.

#	Problem	Interval	Answers
1.	$1+\cos x=0$	$[0,2\pi)$	$\{\pi\}$
2.	$\sqrt{3}-2\sin x=0$	$[0,2\pi)$	$\left\{\frac{\pi}{3},\frac{2\pi}{3}\right\}$
3.	$2\sin x\cos x-\sin x=0$	$[0,2\pi)$	$\left\{0,\pi,\frac{\pi}{3},\frac{5\pi}{3}\right\}$
4.	$\cos x=0$	$\left[0,2\pi\right)$	$\left\{\frac{\pi}{2},\frac{3\pi}{2}\right\}$
5.	$-\sin x=0$	$\left[0,2\pi\right)$	$\{0,\pi\}$
6.	$\frac{1}{2}-\sin x=0$	$\left[0,2\pi\right)$	$\left\{\frac{\pi}{6},\frac{5\pi}{6}\right\}$
7.	$2\sin x\cos x+\cos x=0$	$\left[0,2\pi\right)$	$\left\{\frac{\pi}{2},\frac{3\pi}{2},\frac{7\pi}{6},\frac{11\pi}{6}\right\}$
8.	$-\sin x-1=0$	$\left[0,4\pi\right)$	$\left\{\frac{3\pi}{2},\frac{7\pi}{2}\right\}$
9.	$2-\sec^2 x=0$	$\left(-\frac{\pi}{2},\frac{\pi}{2}\right)$	$\left\{-\frac{\pi}{4},\frac{\pi}{4}\right\}$
10.	$2-\csc^2 x=0$	$\left(0,\pi\right)$	$\left\{\frac{\pi}{4},\frac{3\pi}{4}\right\}$
11.	$1-2\cos x=1$	$\left[-\pi,\pi\right]$	$\left\{\frac{\pi}{2},-\frac{\pi}{2}\right\}$
12.	$2\sec^2 x=\frac{8}{\pi}$	$\left[-\frac{\pi}{4},\frac{\pi}{4}\right]$	$\{\pm 0.4817\}$
13.	$\cos x=\frac{3\sqrt{3}}{2\pi}$	$\left[-\frac{\pi}{3},\frac{\pi}{3}\right]$	$\{\pm 0.5971\}$
14.	$\sin x=\frac{2}{\pi}$	$\left[0,\pi\right]$	$\{0.6901,2.4515\}$
15.	$\cos x=\frac{2}{\pi}$	$\left[0,\frac{\pi}{2}\right]$	$\{0.8807\}$
16.	$2\sec\theta\tan\theta+\sec^2\theta=0$	$[0,2\pi)$	$\left\{\frac{7\pi}{6},\frac{11\pi}{6}\right\}$
17.	$\sec x\tan x=0$	$\left[-\frac{\pi}{4},\frac{\pi}{4}\right]$	$\{0\}$
18.	$2\cos x+2\cos 2x=0$	$\left[0,\pi\right]$	$\left\{\frac{\pi}{3},\pi\right\}$

19.	$2\cos x - 2\sin 2x = 0$	$[0, 2\pi)$	$\left\{\frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{6}, \frac{5\pi}{6}\right\}$
20.	$-2\sin x - 4\sin 2x = 0$	$[0, 2\pi)$	$\{0, \pi, 1.8235, 4.4597\}$
21.	$-\sin x + \sin 2x = 0$	$[0, 2\pi)$	$\left\{0, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$
22.	$-\cos x + 2\cos 2x = 0$	$[0, 2\pi)$	$\{0.5678, 2.2057, 4.0775, 5.7154\}$
23.	$2\csc^2 x \cot x = 0$	$(0, \pi)$	$\left\{\frac{\pi}{2}\right\}$
24.	$2\sin x = \tan x$	$\left[-\frac{\pi}{3}, \frac{\pi}{3}\right]$	$\left\{\pm\frac{\pi}{3}, 0\right\}$
25.	$\sin 2x = \cos x$	$\left[\frac{\pi}{6}, \frac{5\pi}{6}\right]$	$\left\{\frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}\right\}$
26.	$2\sin x + \sin 2x = 0$	$[0, \pi]$	$\{0, \pi\}$
27.	$-\pi \sin \pi x = 0$	$\left[0, \frac{1}{6}\right)$	$\{0\}$
28.	$2\cos 2x = 0$	$\left[\frac{\pi}{6}, \frac{\pi}{3}\right]$	$\left\{\frac{\pi}{4}\right\}$
29.	$4 - \pi \sec^2 \pi x = 0$	$\left[-\frac{1}{4}, \frac{1}{4}\right]$	$\{\pm 0.1533\}$
30.	$\frac{1}{2} - \frac{\pi}{6}\cos\frac{\pi}{6}x = 0$	$[-1, 0]$	$\{-0.5756\}$
31.	$\frac{6}{\pi} - 8\sin x \cos x = 0$	$\left[0, \frac{\pi}{6}\right]$	$\{0.2489\}$
32.	$\cos^2 x - \sin^2 x = 0$	$[0, 2\pi)$	$\left\{\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}\right\}$
33.	$\frac{1}{2}\cos\frac{x}{2} = 0$	$[0, 4\pi)$	$\{\pi, 3\pi\}$
34.	$-\frac{1}{4}\sin\frac{x}{2} = 0$	$[0, 4\pi)$	$\{0, 2\pi\}$
35.	$-3\csc\frac{3x}{2}\cot\frac{3x}{2} = 0$	$(0, 2\pi)$	$\left\{\frac{\pi}{3}, \pi, \frac{5\pi}{3}, \right\}$
36.	$\cos x - \sin x = 0$	$[0, 2\pi)$	$\left\{\frac{\pi}{4}, \frac{5\pi}{4}\right\}$
37.	$-\sin x - \cos x = 0$	$[0, 2\pi)$	$\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$