6.5 Trigonometry short version

Name_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use substitution to determine whether the given x–value is a solution of the equation.

1) $\sin x = -\frac{\sqrt{3}}{2}, \quad x = \frac{4\pi}{3}$ 1) _____

2) $\tan x = \frac{\sqrt{3}}{3}, \quad x = \frac{7\pi}{6}$ 2) _____

3) $\sin x = -\frac{2\sqrt{3}}{3}, \quad x = \frac{-2\pi}{3}$ 3) _____

4) $\cos 2x = -\sqrt{2}, \quad x = \frac{3\pi}{4}$ 4) _____

5) $\cos x + 1 = \sin x, \quad x = \frac{-3\pi}{4}$ 5) _____

Find all solutions of the equation.

6) $\cos x = 0$ 6) _____

7) $2\cos x - \sqrt{3} = 0$ 7) _____

8) $8\cos x - 6\sqrt{3} = 6\cos x - 5\sqrt{3}$ 8) _____

Solve the equation on the interval $[0, 2\pi)$.

9) $\cos 2x = \frac{\sqrt{2}}{2}$ 9) _____

10) $\sin 4x = \frac{\sqrt{3}}{2}$ 10) _____

Find all solutions of the equation.

11) $\tan x \sec x = -2\tan x$ 11) _____

Solve the equation on the interval $[0, 2\pi)$.

12) $\cos x = \sin x$ 12) _____

13) $\sin^2 x - \cos^2 x = 0$ 13) _____

14) $\sin^2 x + \sin x = 0$ 14) _____

Solve the equation on the interval $[0, 2\pi)$.

15) $(\tan x - 1)(\cos x + 1) = 0$ 15) _____

16) $\cos x + 2 \cos x \sin x = 0$ 16) _____

Solve the equation on the interval $[0, 2\pi)$.

17) $\tan 2x - \tan x = 0$ 17) _____

18) $\sin^2 2x = 1$ 18) _____

19) $\cos 2x = \sqrt{2} - \cos 2x$ 19) _____

20) $\cos\left(x + \frac{\pi}{3}\right) + \cos\left(x - \frac{\pi}{3}\right) = 1$ 20) _____

Determine the specific solutions (if any) to the equation on the interval $[0, 2\pi)$.

21) $\sec^2\theta - 2 = \tan^2 \theta$ 21) _____

22) $2 \cos^2\theta + \sin \theta - 2 = 0$ 22) _____

23) $\cot^2 \theta \cos \theta = \cot^2 \theta$ 23) _____

24) $\sin \theta + 2 \sin \theta \cos \theta = 0$ 24) _____

1) Yes
2) Yes
3) No
4) No
5) No
6) $\frac{\pi}{2} + n\pi$
7) $x = \frac{\pi}{6} + 2n\pi$ or $x = \frac{11\pi}{6} + 2n\pi$
8) $x = \frac{\pi}{6} + 2n\pi$ or $x = \frac{11\pi}{6} + 2n\pi$
9) $\frac{\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{15\pi}{8}$
10) $\frac{\pi}{12}, \frac{\pi}{6}, \frac{2\pi}{3}, \frac{7\pi}{12}, \frac{7\pi}{6}, \frac{13\pi}{12}, \frac{5\pi}{3}, \frac{19\pi}{12}$
11) $x = \frac{2\pi}{3} + 2n\pi$ or $x = \frac{4\pi}{3} + 2n\pi$ or $x = n\pi$
12) $\frac{\pi}{4}, \frac{5\pi}{4}$
13) $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$
14) $0, \pi, \frac{3\pi}{2}$
15) $\frac{\pi}{4}, \pi, \frac{5\pi}{4}$
16) $\frac{\pi}{2}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$
17) $0, \pi$
18) $\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$
19) $\frac{\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{15\pi}{8}$
20) 0
21) no solution
22) $0, \pi, \frac{\pi}{6}, \frac{5\pi}{6}$
23) $\frac{\pi}{2}, \frac{3\pi}{2}$
24) $0, \frac{2\pi}{3}, \pi, \frac{4\pi}{3}$