

Secondary Math III
Solve Trigonometric Equations
Assignment 7.1

Name _____
Period _____

*Reminder: The hand trick rationalizes $\sin 45^\circ$ & $\cos 45^\circ \rightarrow \frac{\sqrt{2}}{2} = \frac{1}{\sqrt{2}}$

Find all solutions of the equation in the interval $0^\circ \leq x < 360^\circ$

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

2. $\sin x = \frac{-1}{\sqrt{2}}$

3. $\tan x = -\sqrt{3}$

4. $\csc x = \frac{2}{\sqrt{3}}$

5. $\tan x = \text{undefined}$

6. $\cos x = 0$

Find all solutions of the equation in the interval $0 \leq x < 2\pi$

7. $\cos x = \frac{1}{\sqrt{2}}$

8. $\sin x = -\frac{1}{2}$

9. $\tan x = -\frac{1}{\sqrt{3}}$

10. $\sec x = \sqrt{2}$

11. $\sin x = -1$

12. $\cot x = \text{undefined}$

Solve the trig equation for all solutions of in the interval $[0^\circ, 360^\circ)$.

13. $2\sin x - \sqrt{3} = 0$

14. $\tan^2 x - 1 = 0$

15. $\sin^2 x - \sin x = 0$

Solve the trig equation for all solutions of in the interval $[0, 2\pi)$.

16. $3\tan^2 x - 1 = 0$

17. $2\sin^2 x + \sin x - 1 = 0$

18. $\cos x - \cos x \sin^2 x = 0$

Using a graphing calculator, sketch the graphs and then find the solutions to each equation in the interval $[-180^\circ, 180^\circ]$.

19. $4\cos^2 x = 2\cos x + 1$

20. $3\sin x = \cos x - 2$

21. $2\sin^2 x = 1 + \cos x$

Review:

Convert the angle measure from radians to degrees:

22. $\frac{5\pi}{8}$

23. $-\frac{13\pi}{3}$

24. From the roof of a 100-foot condominium on the coast, a tourist sights a cruise ship. The angle of depression is 2.5° . How far is the ship from the shoreline? The shoreline is 300 feet from the condominium. (Hint: Draw a picture and refresh your memory about what an angle of depression looks like). Round to the nearest foot.

ACT:

25. For x such that $0 < x < \frac{\pi}{2}$, the expression

$\frac{\sqrt{1 - \cos^2 x}}{\sin x} + \frac{\sqrt{1 - \sin^2 x}}{\cos x}$ is equivalent to:

- F. 0
- G. 1
- H. 2
- J. $-\tan x$
- K. $\sin 2x$