

5.3 Solving Trig Equations Practice Worksheet #1
Pre-calculus

Name: _____
Date: _____ Block: _____

Solve for the unknown variable on the interval $0 \leq x < 2\pi$.

1. $4 \cos^2 x - 3 = 0$

$4 \cos^2 x = 3$
 $\cos^2 x = \frac{3}{4}$
 $\cos x = \pm \frac{\sqrt{3}}{2}$
 $30^\circ, 150^\circ, 210^\circ, 330^\circ$

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

$\sin 2x = \frac{1}{\sqrt{2}}$
 $\sin 2x = \frac{\sqrt{2}}{2}$
 $2x = 45^\circ + 360k \quad 2x = 135^\circ + 360k$
 $x = 22.5^\circ + 180k \quad x = 67.5^\circ + 180k$
 $22.5, 202.5 \quad 67.5, 247.5$

3. $3 \cot^2 x - 1 = 0$

$\cot x = \pm \frac{1}{\sqrt{3}}$
 $60^\circ, 120^\circ, 240^\circ, 300^\circ$

4. $\cos^3 x = \cos x$

5. $\sin x - 2 \sin x \cos x = 0$

6. $2 \sin^2 x - \sin x - 3 = 0$

$(2 \sin x - 3)(\sin x + 1) = 0$

7. $\csc^2 x - \csc x - 2 = 0$

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

Solve for the unknown variable on the given interval.

9. $\sqrt{3} + \tan(2x) = 0$ on $[0, 2\pi)$.

10. $\cos(\pi x) = 0.5$ on $[0, 2)$.

11. $\sin\left(\frac{x}{2}\right) - 1 = 0$ on $[0, 8\pi)$.