PROBLEMS AND SOLUTIONS - SOLVING TRIGONOMETRIC EQUATIONS - PART 1
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Please Send Questions and Comments to ingrid.stewart@csn.edu. Thank you!

PLEASE NOTE THAT YOU CANNOT ALWAYS USE A CALCULATOR ON THE ACCUPLACER - COLLEGE-LEVEL MATHEMATICS TEST! YOU MUST BE ABLE TO DO SOME PROBLEMS WITHOUT A CALCULATOR!

Problem 1:

Solve $\sin x = \dfrac{\sqrt{2}}{2}$ for x on the interval $[0, 2\pi)$. Express your answers in **EXACT** radians

Problem 2:

Solve $\sin x = -\dfrac{\sqrt{2}}{2}$ for x on the interval $[0, 2\pi)$. Express your answers in **EXACT** radians

Problem 3:

Solve $\tan x = \sqrt{3}$ for x on the interval $[0, 2\pi)$. Express your answers in **EXACT** radians.

Problem 4:

Solve $\tan x = -\sqrt{3}$ for x on the interval $[0, 2\pi)$. Express your answers in **EXACT** radians.

Problem 5:

Let's solve $\tan x = -\sqrt{3}$ for x again, however, this time on the interval $\left(-\dfrac{\pi}{2}, \dfrac{\pi}{2}\right)$. Be sure to express your answer in **EXACT** radians.

Problem 6:

Solve $\cos x = \dfrac{\sqrt{3}}{2}$ for x on the interval $[0°,360°)$. Express your answers in degrees.

Problem 7:

Solve $\cos x = -0.67$ for x on the interval $[0,2\pi)$. Express your answers in radians.

Problem 8:

Solve $\sin x = 0.15$ for x on the interval $[0,2\pi)$. Express your answers in radians.

Problem 9:

Solve $\tan x = -0.45$ for x on the interval $[0,2\pi)$. Express your answers in radians.

Problem 10:

Solve $\cos x = 0.37$ for x on the interval $[0°,360°)$. Express your answers in degrees.

Problem 11:

Solve $\sin x = 1$ for x on the interval $[0°,720°)$. Express your answers in degrees.

Problem 12:

Solve $\cos x = 0$ for x on the interval $[0°,360°)$. Express your answers in degrees.

SOLUTIONS
You can find detailed solutions below the link for this problem set!

1.	2.	3.
$X_1 = 45° \equiv \dfrac{\pi}{4}$ $X_2 = 180° - 45° = 135° \equiv \dfrac{3\pi}{4}$	$X_1 = 225° \equiv \dfrac{5\pi}{4}$ $X_2 = 315° \equiv \dfrac{7\pi}{4}$	$X_1 = 60° \equiv \dfrac{\pi}{3}$ $X_2 = 240° \equiv \dfrac{4\pi}{3}$
4. $X_1 = 120° \equiv \dfrac{2\pi}{3}$ $X_2 = 300° \equiv \dfrac{5\pi}{3}$	5. $X = -60° \equiv -\dfrac{\pi}{3}$	6. $X_1 = 30°$ $X_2 = 330°$
7. $X_1 \approx 2.31$ $X_2 \approx \pi + 0.83 = 3.97$	8. $X_1 \approx 0.15$ $X_2 \approx \pi - 0.15 = 2.99$	9. $X_1 \approx \pi - 0.42 = 2.72$ $X_2 \approx 2\pi - 0.42 = 5.86$
10. $X_1 \approx 68.28°$ $X_2 \approx 360° - 68.28° = 291.72°$	11. $X_1 = 90°$ $X_2 = 360° + 90° = 450°$	12. $X_1 = 90°$ $X_2 = 270°$