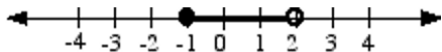


Interval Notation (from Mathwords.com)

Interval notation is a notation for representing an interval as a pair of numbers. The numbers are the endpoints of the interval.

Parentheses and/or brackets are used to show whether the endpoints are included or excluded. For example, $[-1, 2)$ is the interval of real numbers between -1 and 2 , including -1 and excluding 2 .

Inequality Notation

$1 < x < 4$

$-3 \leq x \leq 8$

$2 \leq x < 5$

$x > 6$

$x \leq 7$

Interval Notation

$(1, 4)$

$[-3, 8]$

$[2, 5)$

$(6, \infty)$

$(-\infty, 7]$

Introduction

To solve a trigonometric equation, use standard algebraic techniques such as collecting like terms and factoring. Your preliminary goal is to isolate the trigonometric function involved in the equation.

Example 1

Solve the equation $2\cos(x) + 1 = 0$ algebraically.

Example 2

Solve the equation $\csc^2(x) - 2 = 0$ algebraically.

Example 3

Find all solutions of the equation $3\tan^3(x) = \tan(x)$ in the interval $[0, 2\pi)$ algebraically.

Example 4

Find all solutions of the equation $2\sin^2(x) + 3\sin(x) + 1 = 0$ in the interval $[0, 2\pi)$ algebraically.

Example 5

Find all solutions of the equation $2\sin^2(x) = \cos(x) + 1$ in the interval $[0, 2\pi)$ algebraically.

In Exercises 1-4, solve the equation algebraically.

1. $\sqrt{2} \sin(x) + 1 = 0$

2. $3\csc^2(x) - 4 = 0$

3. $\cos^2(x) - \cos(x) = 0$

4. $\sin^2(x) = 3\cos^2(x)$

In Exercises 5-8, find all solutions of the equation in the interval $[0, 2\pi)$ algebraically.

5. $\tan^2(x) - 1 = 0$

6. $\sec^2(x) - \sec(x) = 2$

7. $\sec(x)\csc(x) = 2\sec(x)$

8. $\sec^2(x) + \tan(x) = 1$