Solving Trigonometric Equations

- **Isolate trig function. Factor or apply other quadratic strategies first, if necessary. Make use of fundamental trigonometric identities as needed.**
- **Depending on the period of isolated trig function, identify all solutions on the interval $[0, 2\pi)$ or $[0, \pi)$.**
- **State the general solution (which accounts for ALL solutions).**
- **List all solutions on interval $[0, 2\pi)$.**
- **Check your solutions!!!**

Example #1 $2\cos x - 1 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #2 $3\tan^2 x - 1 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #3 $2\sin^2 x + 3\sin x + 1 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #4 $\csc x - 2 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #5	$2\cos^2 x - 1 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #6	$\sec x \csc x - 2\csc x = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #7	$2\sec^2 x + \tan^2 x - 3 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #8	$\cos x + 1 = \sin x$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #9 $\sin 2x = -\dfrac{\sqrt{3}}{2}$

General Solution:
List of all solutions on interval $[0, 2\pi)$:

Example #10 $\cos \dfrac{x}{2} = \dfrac{\sqrt{2}}{2}$

General Solution:
List of all solutions on interval $[0, 2\pi)$:

Example #11 $2\cos 3x - 1 = 0$

General Solution:
List of all solutions on interval $[0, 2\pi)$:

Example #12 $2\sin^2 2x = 1$

General Solution:
List of all solutions on interval $[0, 2\pi)$:

Example #13 $6\cos^2 x - 13\cos x + 6 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #14 $\tan^2 x - 8\tan x + 13 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$:

Example #15 $4\cos^2 x - 2\sin x + 1 = 0$

General Solution:

List of all solutions on interval $[0, 2\pi)$: