

## Algebraic Solutions of Trigonometric Equations

Solutions of Basic Trigonometric Equations		
Equation	Possible values of $c$	Solutions
$\sin x = c$	$-1 < c < 1$	$x = \sin^{-1} c + 2k\pi$ and $x = (\pi - \sin^{-1} c) + 2k\pi$
	$c = 1$	$x = \frac{\pi}{2} + 2k\pi$
	$c = -1$	$x = -\frac{\pi}{2} + 2k\pi$
	$c > 1$ or $c < -1$	no solution
$\cos x = c$	$-1 < c < 1$	$x = \cos^{-1} c + 2k\pi$ and $x = -\cos^{-1} c + 2k\pi$
	$c = 1$	$x = 0 + 2k\pi = 2k\pi$
	$c = -1$	$x = \pi + 2k\pi$
	$c > 1$ or $c < -1$	no solution
$\tan x = c$	all real numbers	$x = \tan^{-1} c + k\pi$