

SAT PREP

GENERAL SOLUTION OF TRIGONOMETRIC EQUATION

Trigonometrical equation	General Solution
$\sin \theta = 0$	Then $\theta = n\pi$
$\cos \theta = 0$	$\theta = (n\pi + \pi/2)$
$\tan \theta = 0$	$\theta = n\pi$
$\sin \theta = 1$	$\theta = (2n\pi + \pi/2) = (4n+1)\pi/2$
$\cos \theta = 1$	$\theta = 2n\pi$
$\sin \theta = \sin \alpha$	$\theta = n\pi + (-1)^n \alpha$, where $\alpha \in [-\pi/2, \pi/2]$
$\cos \theta = \cos \alpha$	$\theta = 2n\pi \pm \alpha$, where $\alpha \in (0, \pi]$
$\tan \theta = \tan \alpha$	$\theta = n\pi + \alpha$, where $\alpha \in (-\pi/2, \pi/2]$
$\sin 2\theta = \sin 2\alpha$	$\theta = n\pi \pm \alpha$
$\cos 2\theta = \cos 2\alpha$	$\theta = n\pi \pm \alpha$
$\tan 2\theta = \tan 2\alpha$	$\theta = n\pi \pm \alpha$

If α is assumed to be the least positive value of θ which satisfies two given trigonometrical equations, then the general value of θ will be $2n\pi + \alpha$.