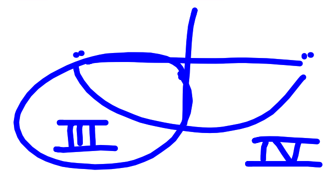
Solving for θ

ex. Given $\cos\theta = \frac{-1}{2}$, determine the exact value of θ. $180^\circ < \theta < 360^\circ$

$\theta = \frac{4\pi}{3}$

$\boxed{\theta = 240^\circ}$



ex. Find θ over the interval $[0, 2\pi]$ if $\cos\theta = -\frac{\sqrt{2}}{2}$

$\boxed{\theta = \frac{3\pi}{4}, \frac{5\pi}{4}}$

ex. Find θ over the interval $[0^\circ, 180^\circ]$ if $\sin\theta = \frac{\sqrt{3}}{2}$

$\boxed{\theta = 60^\circ, 120^\circ}$

General Solution

ex. Solve for θ: $\sin\theta = \frac{1}{2}$

a) over $[0, 2\pi]$

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$\theta = \frac{\pi}{6}, \frac{5\pi}{6}$

b) over $[0, 4\pi]$

$\theta = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{13\pi}{6}, \frac{17\pi}{6}$

$+2\pi$ $+2\pi$

$[-2\pi, 2\pi]$

$\theta = -\frac{11\pi}{6}, -\frac{7\pi}{6}, \frac{\pi}{6}, \frac{5\pi}{6}$

c) over $(-\infty, \infty)$ or $\theta \in \mathbb{R}$ or over the reals

or general solution

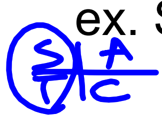
$\theta = \frac{\pi}{6} + 2\pi k$

$\theta = \frac{5\pi}{6} + 2\pi k$

$k \in \mathbb{Z}$ or $k \in I$

or k is an integer

ex. Solve $\cos\theta = -\frac{\sqrt{2}}{2}$ where $\theta \in \mathbb{R}$



$\theta = \frac{3\pi}{4} + 2k\pi$

$\theta = \frac{5\pi}{4} + 2k\pi$ $\quad k \in I$

or

$\theta = 135^\circ + 360^\circ k$

$\theta = 225^\circ + 360^\circ k$ $\quad k \in I$