7.2a Solving 1st Degree Trig Equations

Note Title 03/12/2012

Solve $\sin x + 1 = 0$

a) for $0 \le x < 2\pi$

b) without restrictions (general solution)

$\sin x + 1 = 0$

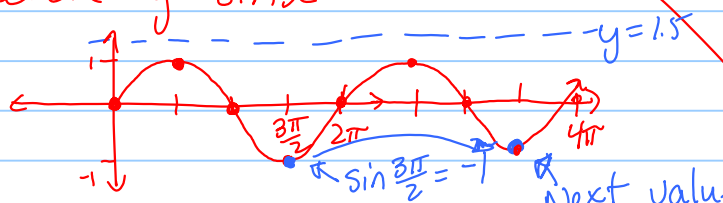
$\sin x = -1$

try: $\sin^{-1}(-1) = -90°$

$x = \frac{3\pi}{2} + 2\pi n$

$n \in \mathbb{Z}$

sketch $y = \sin x$



So $x = \frac{3\pi}{2}$ is $\frac{3\pi}{2} + 2\pi$

Solve $2\sin x - 3 = 0$.

$2\sin x = 3$

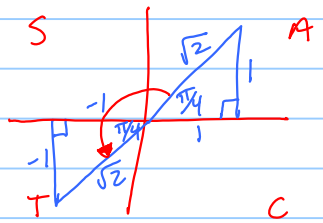
$\sin x = 1.5$

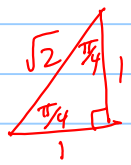
No solution

$-1 \le \sin x \le 1$

Give the general solution to $\tan x - 1 = 0$

$\tan x = 1$ ← Positive!





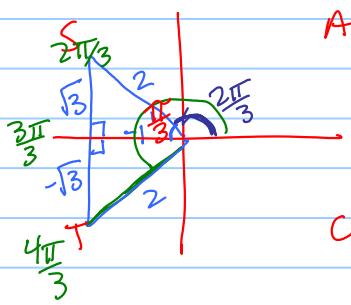
$x = \frac{\pi}{4} + 2\pi n, \frac{5\pi}{4} + 2\pi n$

OR $x = \frac{\pi}{4} + \pi n$, $n \in \mathbb{Z}$

↑ period of tan

Solve $2\cos x + 1 = 0$.

$\cos x = \frac{-1}{2} = \frac{A}{H}$ ← Need to recognize $1, 2, \sqrt{3}, \sqrt{2}$



$x = \frac{2\pi}{3} + 2\pi n, \frac{4\pi}{3} + 2\pi n$,

$n \in \mathbb{Z}$