

## SOLVING SIMPLE TRIG EQUATIONS

 $y_1$   $y_2$ 

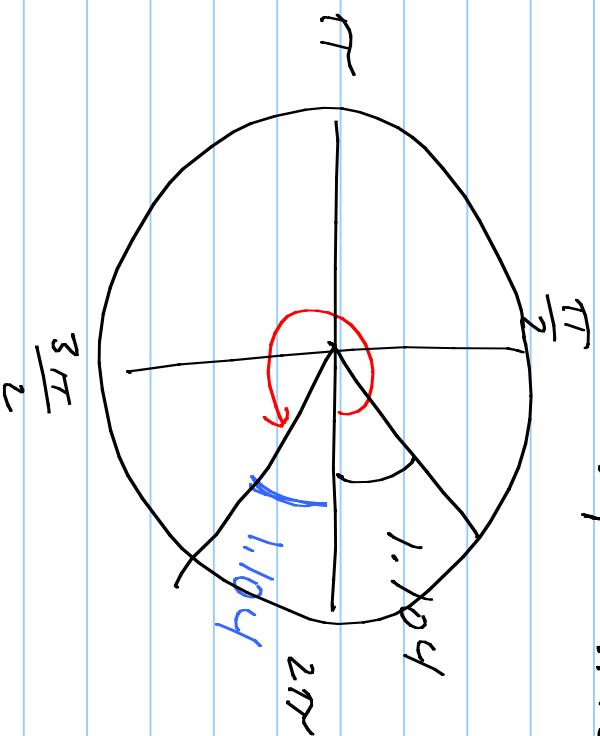
EG SOLVE  $\cos x = 0.45$   $0 \leq x \leq 2\pi$

$$\cos^{-1}(\cos x) = \cos^{-1} 0.45$$

$$x_1 = 1.104$$

$$x_2 = 2\pi - 1.104$$

$$x_2 = 5.179$$



IB  $\cos x = 0.4$  USE ALL REAL NUMBERS

$$x_1 = 1.104 + 2\pi n$$

$$x_2 = 5.179 + 2\pi n$$

$n \in \mathbb{I}$

$n$  IS AN ELEMENT OF THE

INTEGERS

IE SOLVE  $\cos \theta - 1 = 0$   $0 \leq \theta < 2\pi$

Solve  $\cos \theta - 1 = 0$   
 $\neq 1 + 1$

$$\frac{\cos \theta - 1}{3} = \frac{1}{3}$$

$$\sin \theta = \frac{1}{3}$$

$$\sin^{-1}\left(\frac{1}{3}\right) = 0.3398$$

$$\theta_1 = 0.3398$$

$$\theta_2 = \pi - 0.3398$$

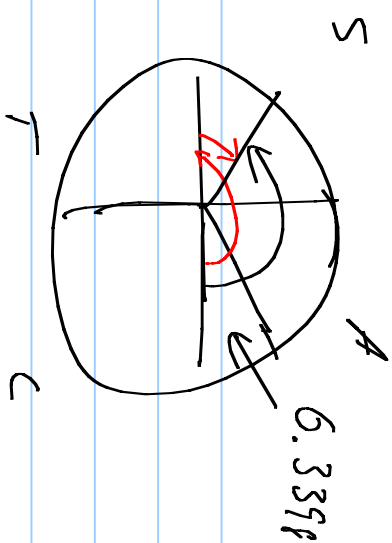
$$\theta_2 = 2.8017$$

PE SOLVE  $2 \sin \theta - 1 = 4 \sin \theta$  OVER THE REALS.

SOLN  $2 \sin \theta - 1 = 4 \sin \theta$

$$-2 \sin \theta - 1 = -2 \sin \theta$$

$$-1 = \frac{2 \sin \theta}{2}$$



$$-\frac{1}{2} = \sin \theta$$

$$\sin^{-1}\left(-\frac{1}{2}\right) = -0.5236$$

$$\theta_1 = -0.5236 + 2n\pi$$

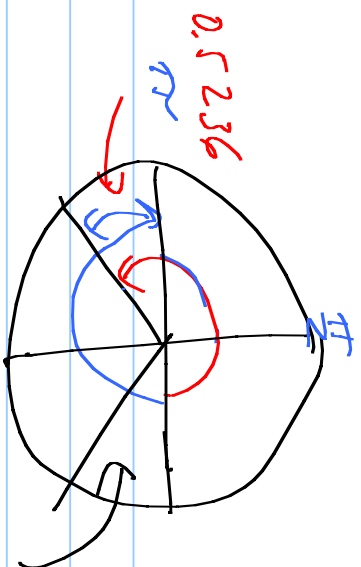
$$\theta_2 = \pi + 0.5236$$

$$\theta_2 = 3.6652 + 2n\pi$$

$n \in \mathbb{I}$

$$-\frac{\pi}{2}$$

$$-0.5236$$

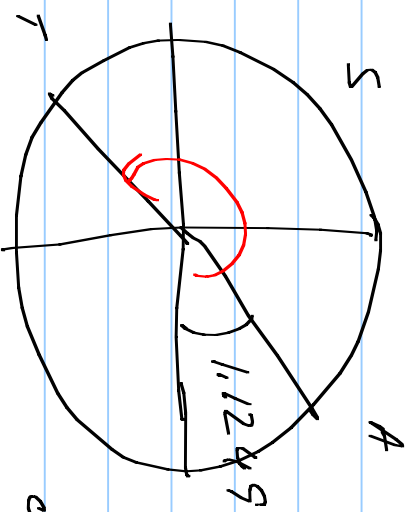


$$-\pi + 0.5236 = -2.618$$

DE SOLVE  $\tan x = 3$   $0 \leq x < 2\pi$

SOLN  $\tan^{-1}(3) = 1.1071$

$$x_1 = 1.1071$$



$$x_2 = \pi + 1.2496$$

$$x_2 = 4.3906$$

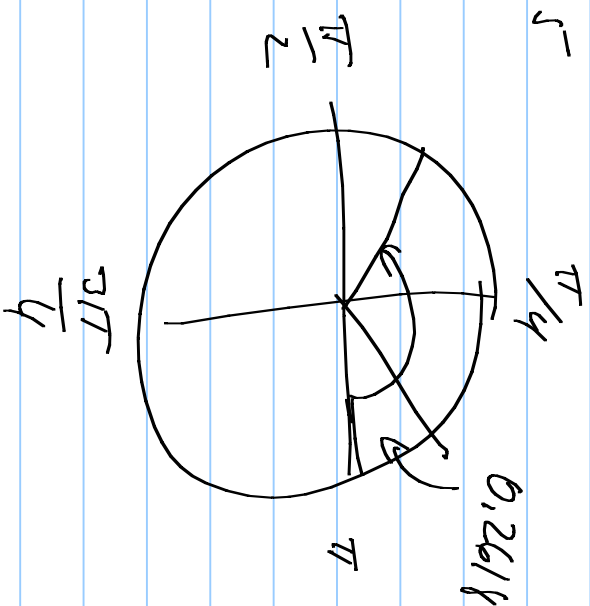
IB Solve  $\sin 2x = 0.5$        $0 \leq x < \pi$

Solve  $\sin^{-1}(\sin 2x) = \sin^{-1} 0.5$

$$\frac{2x}{2} = \frac{0.5236}{2}$$

$$x_1 = 0.2618$$

$$x_2 = \frac{\pi}{2} - 0.2618$$



IE Solve  $\cos\left(x - \frac{\pi}{3}\right) = 0.26$

Solve

$$x - \frac{\pi}{3} = \cos^{-1} 0.26$$

$$x - \frac{\pi}{3} = 1.3073$$

$$x_1 = 1.3073 + \frac{\pi}{3}$$

$$x_2 = 2.3555$$

H/W Pg 302 # 1, 5, 6, 7 A, C, E, ...