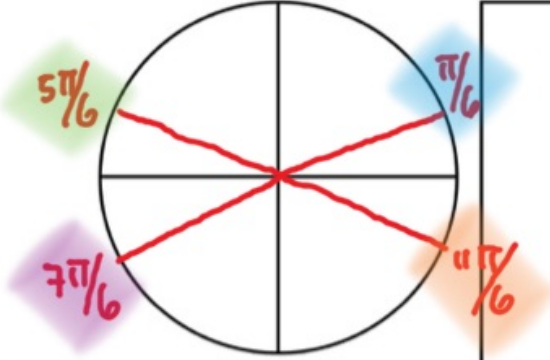


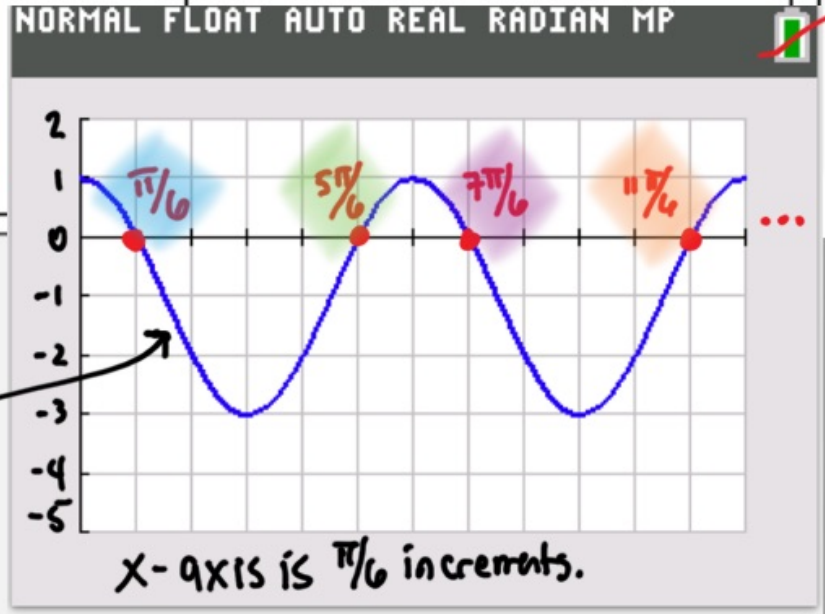
Find ALL solutions  
 $4\cos^2(x) - 3 = 0$

$\cos^2(x) = 3/4$   
 $\cos(x) = \pm \sqrt{3}/2$



$x = \pi/6 + \pi n$   
 $x = 5\pi/6 + \pi n$

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$4\cos^2(x) - 3$

x-axis is  $\pi/6$  increments.

**E.O.** Find ALL solutions

$$\cos^2(x) = 1 - \sin(x)$$

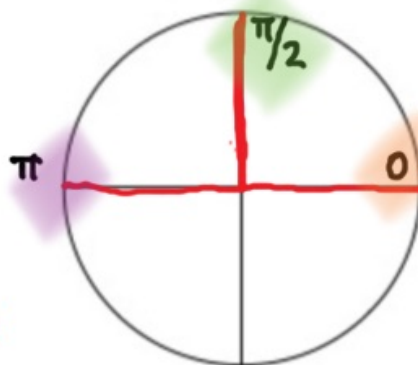
$$(1 - \sin^2(x)) = 1 - \sin(x)$$

$$\sin^2(x) - \sin(x) = 0$$

$$\sin(x)[\sin(x) - 1] = 0$$

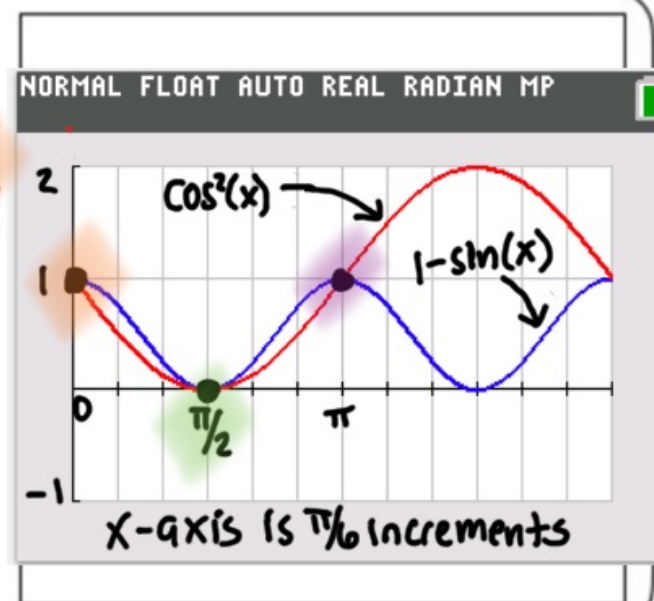
$$\sin(x) = 0 \quad \sin(x) - 1 = 0$$

$$\sin(x) = 1$$



$$x = \pi n$$

$$x = \pi/2 + 2\pi n$$



Find ALL solutions

$$2\sin^2(x) - \sin(x) = 3$$

let  $\sin(x) = t$

$$2t^2 - t = 3$$

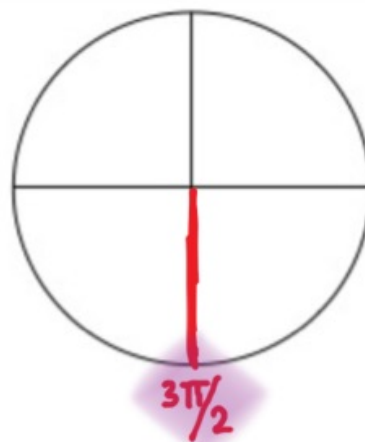
$$2t^2 - t - 3 = 0$$

$$(2t - 3)(t + 1) = 0$$

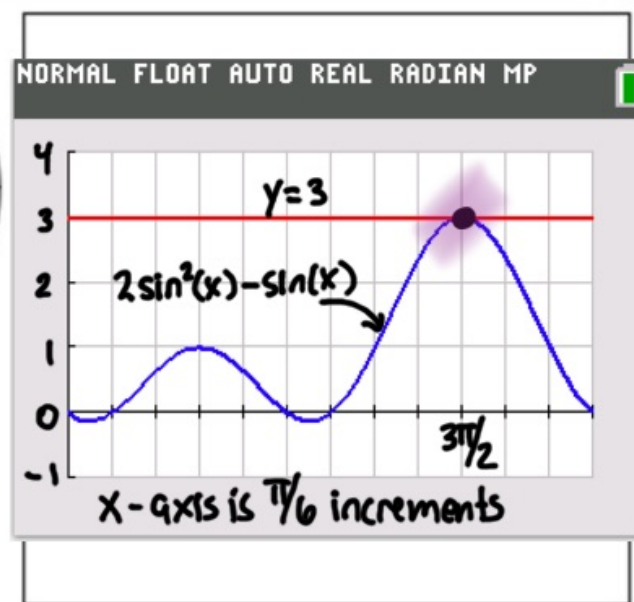
$$2t - 3 = 0 \quad t + 1 = 0$$

$$t = \frac{3}{2} \quad t = -1$$

~~$\sin(x) = \frac{3}{2}$~~   $\sin(x) = -1$



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

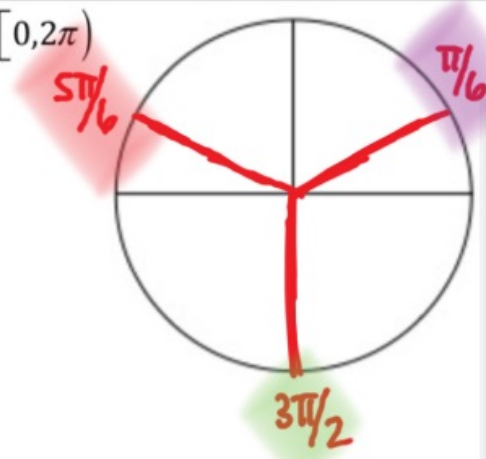


Find solutions over the interval  $[0, 2\pi)$   
 $\csc^2(\theta) - \csc(\theta) - 2 = 0$

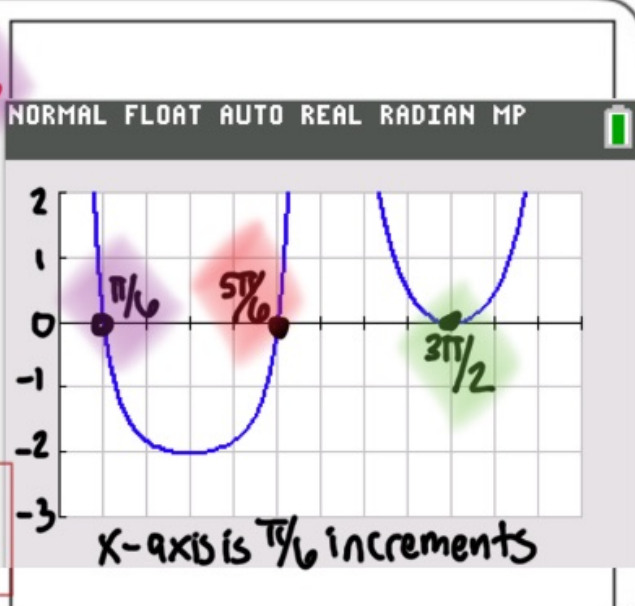
let  $t = \csc(\theta)$   
 $t^2 - t - 2 = 0$   
 $(t-2)(t+1) = 0$   
 $t-2=0 \quad t+1=0$   
 $t=2 \quad t=-1$

$\csc(x) = 2 \quad \csc(x) = -1$

$\rightarrow \sin(x) = \frac{1}{2} \quad \sin(x) = -1$



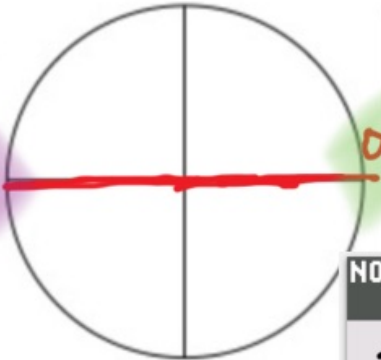
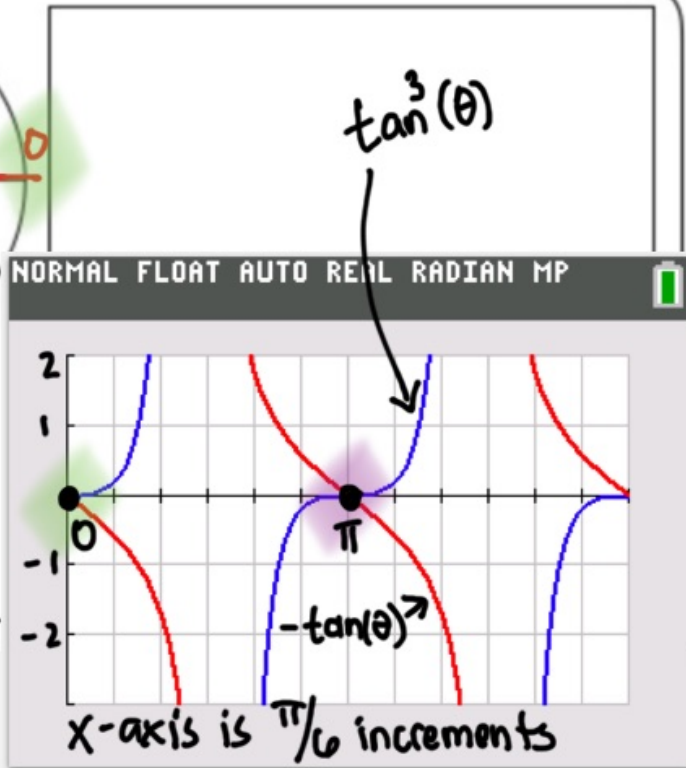
$x = \pi/6, 5\pi/6, 3\pi/2$



Find solutions over the interval  $[0, 2\pi)$   
 $\tan^3(\theta) = -\tan(\theta)$

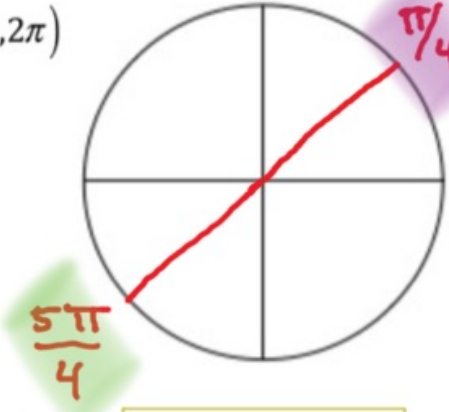
$\tan^3(x) + \tan(x) = 0$   
 $\tan(x) [\tan^2(x) + 1] = 0$   
 ~~$\tan(x) = 0$   $\tan^2(x) + 1 = 0$~~

$x = 0, \pi$

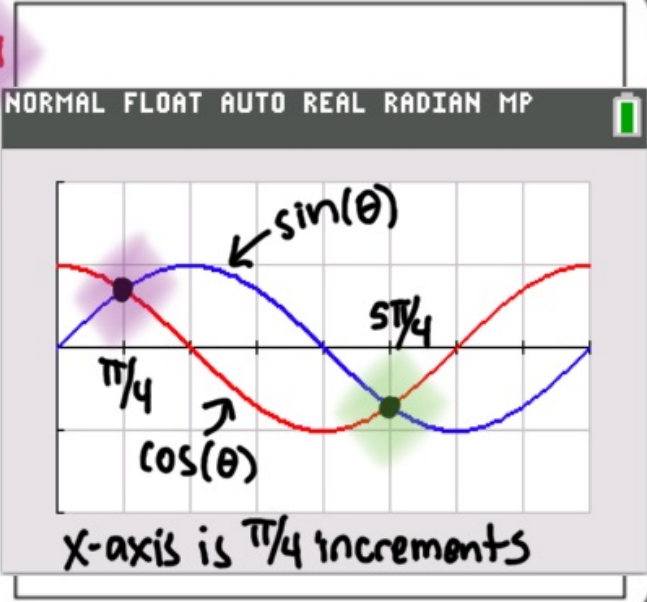



Find solutions over the interval  $[0, 2\pi)$

$\frac{\sin(\theta)}{\cos(\theta)} = \frac{\cos(\theta)}{\cos(\theta)}$   
 $\tan(\theta) = 1$



$x = \pi/4 + \pi n$



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$\sin(\theta)$

$\cos(\theta)$

$\pi/4$

$5\pi/4$

x-axis is  $\pi/4$  increments

