

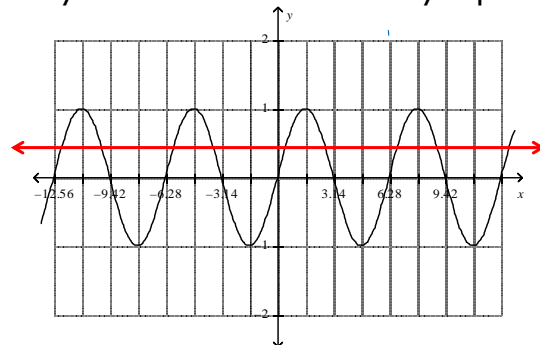
5-3: SOLVING GENERAL TRIGONOMETRIC EQUATIONS

CP Precalculus
Mr. Gallo

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

Use the calculator. Graph $y = \sin(x)$ and $y = 0.5$.

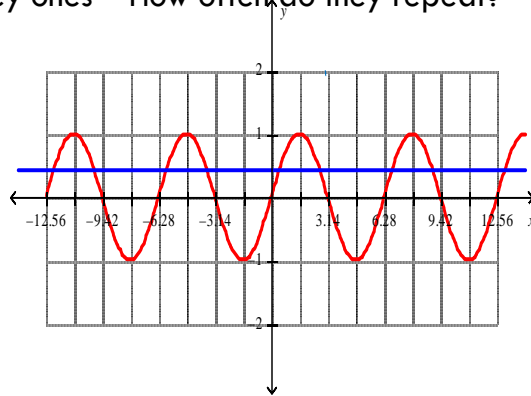
- Set your window to have x-max of 4π (set your x-scale to be $\pi/2$)
- Set your window to have a y-min of -2 and a y-max of 2
- How many solutions. How would you write them all?
- Find two key ones – How often do they repeat?



$$\sin \theta = 0.4199$$

Use the calculator. Graph $y = \sin(x)$ and $y = 0.4199$.

- Set your window to have x-min of -4π and max of 4π with a scale of $\pi/2$
- Set your window to have a y-min of -2 and a y-max of 2 .
- How many solutions. How would you write them all?
- Find two key ones – How often do they repeat?



FINDING THE OTHER ANGLE MEASURE

For $\text{TRIG}(x) = A$ (i.e. $\sin(x) = .4199$)

1. Look at A. Determine if it is positive or negative and write down **which quadrants** your answers will be in.
2. Take the $\text{INVERSETRIG}(|A|)$ and write it down as the ref angle.
3. Then, calculate the other angle(s) as follows:

Quad II	Quad I
$\pi - x$	$x = \text{ref angle}$
Quad III	Quad IV
$\pi + x$	$2\pi - x$

$$\cos \theta = 0.158$$

Solve for all θ in radians:

$$\theta = 1.41 \text{ (use calculator)}$$

$$\theta = 2\pi - 1.41 = 4.87$$

General Solutions:

$$\theta = 1.41 + 2\pi n \quad n \in \mathbb{Z}$$

$$\theta = 4.87 + 2\pi n \quad n \in \mathbb{Z}$$

$$3 \tan^2 x + 4 \tan x + 1 = 0$$

Find all values for (x) in radians:

$$3 \tan^2 x + 4 \tan x + 1 = 0$$

$$3 \tan^2 x + 3 \tan x + \tan x + 1 = 0$$

$$(3 \tan x + 1)(\tan x + 1) = 0$$

$$3 \tan x + 1 = 0$$

$$\tan x + 1 = 0$$

$$\tan x = -\frac{1}{3}$$

$$\tan x = -1$$

$$x = \pi - .322 = 2.82$$

$$x = \frac{3\pi}{4} \quad x = \frac{7\pi}{4}$$

$$x = 2\pi - .322 = 5.96$$

$$\sin^2 x - 2\sin x + 1 = 0$$

Find all values for (x) in radians:

$$\sin^2 x - 2\sin x + 1 = 0$$

$$(\sin x - 1)^2 = 0$$

$$\sin x - 1 = 0$$

$$\sin x = 1$$

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

HOMEWORK: HOMEWORK WS