

Cornell Notes



Topic/Objective: 13-4 Graphing  
Circular Functions

Name:

Class/Period: 4

Date: 5/25/17

Essential Question: What are the important properties of Trig graphs?

Questions:

Notes: Parent Graphs

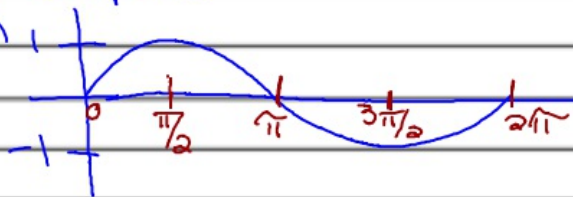
Sine graph

Amplitude = 1

Period =  $2\pi$

p.s. = none

v.s. = none



mid max mid min mid

Parent Function:

$$y = a \sin\left(b\left(x - \frac{c}{b}\right)\right) + d$$

$a$  = Amplitude

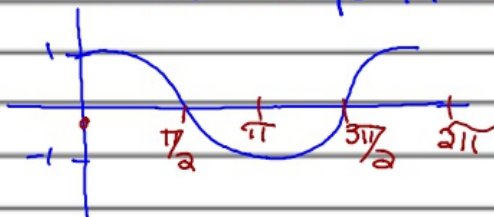
$$P = \frac{2\pi}{b} \text{ and } b = \frac{2\pi}{P}$$

$\frac{c}{b}$  = p.s. horizontal shift  $- \rightarrow$   
 $+ \leftarrow$

$d$  = v.s. vertical shift  $+ \uparrow$

$- \downarrow$

Cosine Graph / Function



max mid min mid max

$$y = a \cos\left(b\left(x - \frac{c}{b}\right)\right) + d$$

Questions:

Notes: Ex 1 Graph 1 Period of  $y = \sin(x - \pi/2)$

STEP 1:

Identify

Amplitude =  $a = 1$

Period =  $b = 1$

$P = \frac{2\pi}{b} = \frac{2\pi}{1} = 2\pi$

phaseshift = right  $\pi/2$

vertical shift =  $d = 0$  none

STEP 2:

Find the start and end point for 1 Period

start:  $\pi/2$

end:  $5\pi/2$

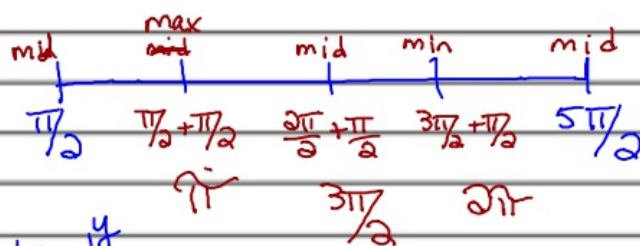
$\pi/2 + 2\pi = \frac{\pi}{2} + \frac{4\pi}{2} = \frac{5\pi}{2}$

Start + Period

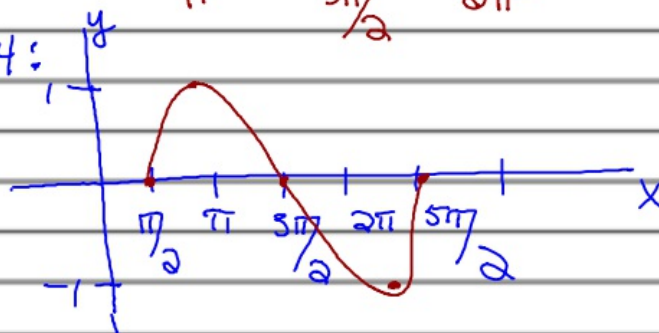
STEP 3: Find the 5 points

- take the period and divide by 4
- this gives the distance between the points

$$\frac{P}{4} = \frac{2\pi}{4} = \frac{\pi}{2}$$



STEP 4:



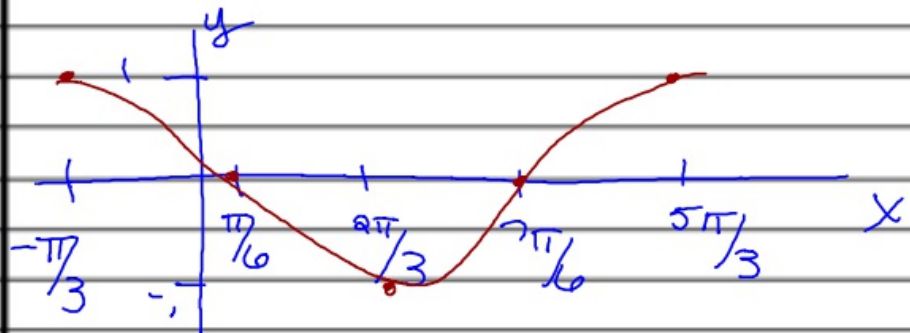
Questions:

Notes: Ex 2) Graph (Period of  $y = \cos(x + \pi/3)$ )

Step 1:  $A = 1$   
 $P = \frac{2\pi}{\omega} = 2\pi$   
p.s. = left  $\pi/3$   
v.s. = none

Step 2: start:  $-\pi/3$   $-\pi/3 + 2\pi$   
end:  $5\pi/3$   $-\pi/3 + 6\pi = \frac{5\pi}{3}$

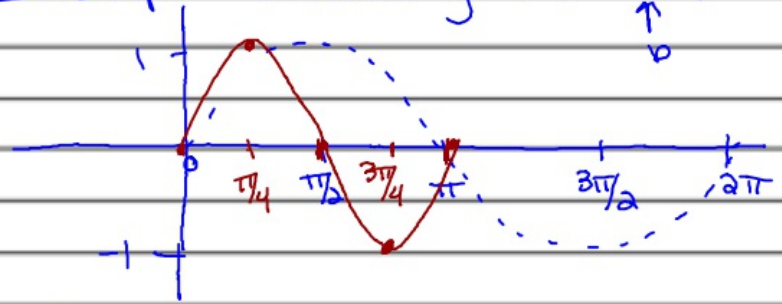
Step 3: max mid min  $\frac{\pi}{6}$  mid max  
 $-\pi/3$   $\frac{-\pi}{3} + \frac{\pi}{3}$   $\frac{\pi}{6} + \frac{2\pi}{6}$   $\frac{4\pi}{6} + \frac{3\pi}{6}$   $5\pi/3$   
 $\frac{2\pi}{6} + \frac{3\pi}{6}$   $\frac{4\pi}{6}$   $\frac{7\pi}{6}$   
 $\frac{2\pi}{4} = \frac{\pi}{2}$   $\frac{\pi}{6}$   $\frac{2\pi}{3}$



Questions:

Notes:

Ex 3 Graph 1 Period of  $y = \sin(2x)$



STEP 1:

$$A = 1$$

$$P = \frac{2\pi}{2} = \frac{2\pi}{b} \text{ and } b = 2 \quad P = \pi$$

p.s. = none

r.s. = none

STEP 2: start: 0

$$\text{end: } \pi \quad 0 + \pi = \pi$$

Step 3: mid max mid min mid

$$0 \quad 0 + \frac{\pi}{4} \quad \frac{\pi}{4} + \frac{\pi}{4} \quad \frac{2\pi}{4} + \frac{\pi}{4} \quad \pi$$

$$\frac{P}{4} = \frac{\pi}{4}$$

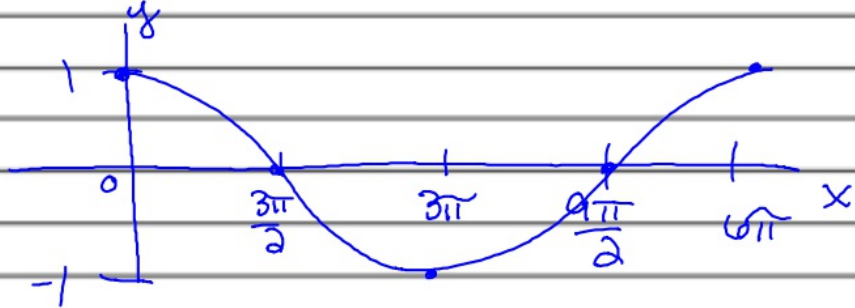
$$\frac{\pi}{4}$$

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

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

Questions:

Notes: Ex 4) Graph 1 Period of  $y = \cos(\frac{1}{3}x)$



$$\frac{6\pi}{4} = \frac{3\pi}{2}$$

$$\frac{3\pi}{2} + \frac{3\pi}{2}$$

$$\frac{6\pi}{2} + \frac{3\pi}{2}$$

$$\frac{3\pi}{2} + \frac{3\pi}{2}$$

$$\frac{9\pi}{2}$$

$$\frac{6\pi}{2}$$

$$3\pi$$