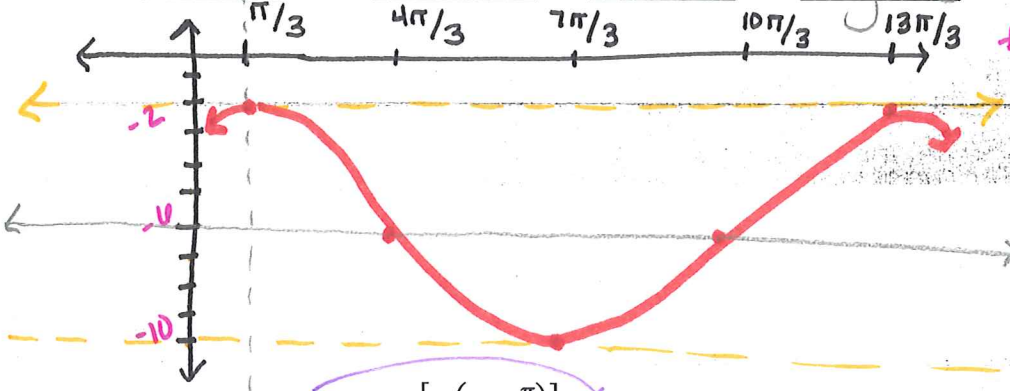
Trig Transformations Day 2 Notes
Supp Alg 2 14.2 Radians & Equation Writing

Name Key

Sketch a graph of the following. State the amplitude, period, vertical shift and phase shift.

Example 1: $y = 4cos\left[\frac{1}{2}\left(\theta - \frac{\pi}{3}\right)\right] - 6$

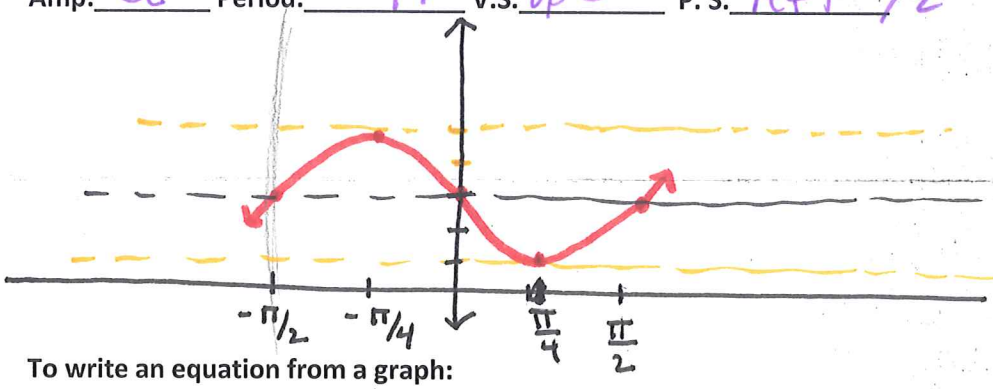
Amp: 4 Period: $\frac{2\pi}{1/2} = 4\pi$ V.S. down 6 P. S. Right $\frac{\pi}{3}$



0	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
0	π	2π	3π	4π
$+\frac{\pi}{3}$	$\frac{\pi}{3}$	$\frac{4\pi}{3}$	$\frac{7\pi}{3}$	$\frac{10\pi}{3}$	$\frac{13\pi}{3}$

Example 2: $y = 3 + 2sin\left[2\left(\theta + \frac{\pi}{2}\right)\right]$

Amp: 2 Period: $2\pi/2$ π V.S. up 3 P. S. left $\pi/2$

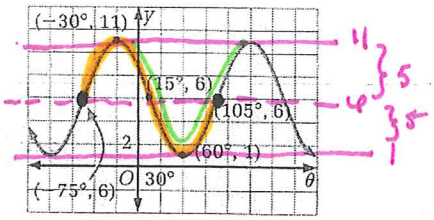


0	$\frac{\pi}{4}$	$\pi/2$	$\frac{3\pi}{4}$	π	
$-\frac{\pi}{2}$	$-\frac{\pi}{4}$	0	$\frac{\pi}{4}$	$\frac{\pi}{2}$	$(-\frac{\pi}{2})$

To write an equation from a graph:

1. Find Amplitude
2. Identify the period from graph and then solve to find b
3. Find the vertical translation (sketch midline)
4. Write a sine or cosine function depending on the phase shift.

Example 3: Write an equation for the graph.



Amplitude: A=5

Period: $-75° \rightarrow 105° \Rightarrow P = 180°$

$\therefore B = 2$ bc $360 \div 2 = 180°$

$y = A\sin B(\theta - C) + D$

left 75° C=-75

Mid line = 6

$\boxed{y = 5\sin 2(\theta + 75) + 6}$ or $\boxed{y = 5\cos 2(\theta + 30) + 6}$