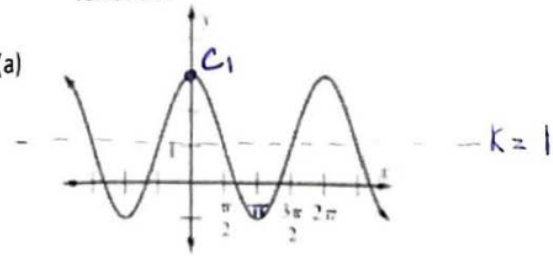
Pre-Cal Honors
Sec 4.5-4.6 TEST REVIEW

Name: Key Per: ____

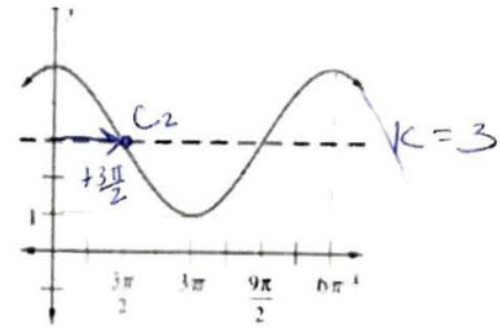
1) Examine the graph below and determine the amplitude, period, phase shift, and vertical shift of each using (a) cosine as the parent function (b) sine function as the parent function. Then write an equation of the function.

(a)



Amplitude: 2
Period: 2π , $b = 1$
Phase Shift: $\emptyset$
Vertical Shift: 1
Function: $y = 2\cos x + 1$

(b)



Amplitude: 2
Period: 6π , $b = \frac{1}{3}$
Phase Shift: $\frac{3\pi}{2}$ right
Vertical Shift: 3
Function: $y = -2\sin\frac{1}{3}\left(x - \frac{3\pi}{2}\right) + 3$

$\frac{2\pi}{b} = \frac{6\pi}{1}$

$6\pi b = 2\pi$

$b = \frac{1}{3}$

2) Graph each function using radians, give a table of values of one cycle and state the domain and range of each. Find the amplitude, increment, period, phase shift, vertical shift and the minimum and maximum values. Then sketch the graph.

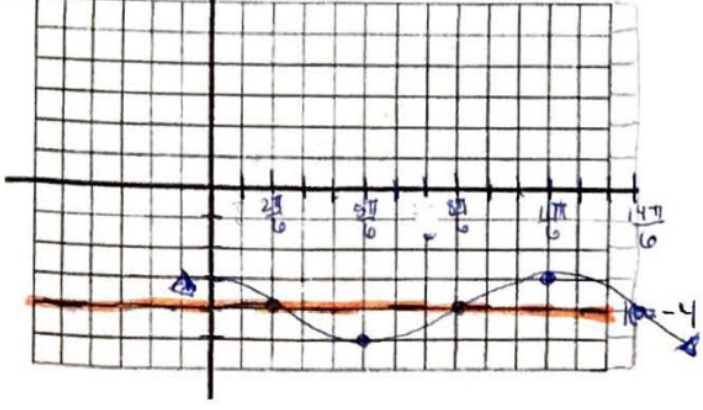
a) $y = -\sin\left(x - \frac{\pi}{3}\right) - 4$

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

X	New	
0	$\pi/3$	-4
$\frac{\pi}{6} = \frac{\pi}{2}$	$\frac{5\pi}{6}$	-5
$\frac{\pi}{6} = \pi$	$\frac{8\pi}{6} = \frac{4\pi}{3}$	-4
$\frac{\pi}{6} = \frac{3\pi}{2}$	$\frac{11\pi}{6}$	-3
$\frac{\pi}{6} = 2\pi$	$\frac{14\pi}{6} = \frac{7\pi}{3}$	-4

amp: 1 max: -3
Period = 2π min: -5
Inc = $\pi/2$
PS: $\pi/3$
VS: -4

D: $\{x \in \mathbb{R}\}$
R: $\{y \in \mathbb{R} \mid -5 \le y \le -3\}$



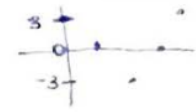
b) $y = 3\cos\left(2x - \frac{\pi}{3}\right)$

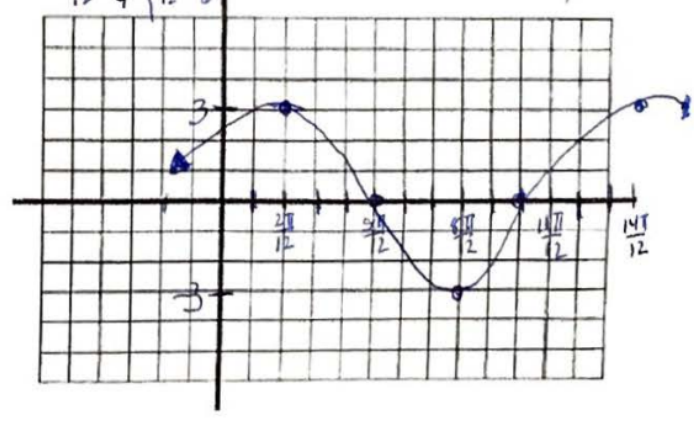
$+\frac{2\pi}{12} = 3\cos 2\left(x - \frac{\pi}{6}\right)$

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

X	New	
0	$\frac{2\pi}{12} = \frac{\pi}{6}$	3
$\frac{3\pi}{12} = \frac{\pi}{4}$	$\frac{5\pi}{12}$	0
$\frac{6\pi}{12} = \frac{2\pi}{4}$	$\frac{8\pi}{12} = \frac{4\pi}{3}$	-3
$\frac{9\pi}{12} = \frac{3\pi}{4}$	$\frac{11\pi}{12}$	0
$\frac{12\pi}{12} = \frac{4\pi}{4}$	$\frac{14\pi}{12} = \frac{7\pi}{6}$	3

amp = 3 max: 3
Period = π min: -3
Inc = $\pi/4$
P.S. = $\pi/6$
V.S = none





c) $y = 3\sec\left(x + \frac{\pi}{2}\right)$

Period = 2π

Inc: $\frac{2\pi}{4} = \frac{\pi}{2}$

amp = 3

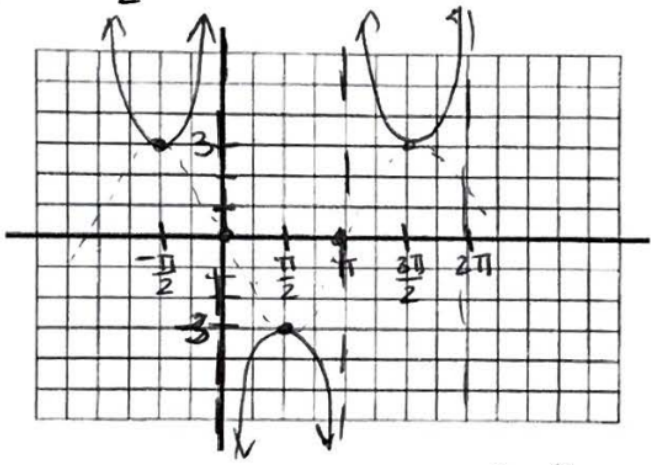
P.S: $-\pi/2$

V.S: none

max: 3

min: -3

X	New	
0	$-\pi/2$	3
$\frac{\pi}{2}$	0	0
$\frac{2\pi}{2}=\pi$	$\pi/2$	-3
$\frac{3\pi}{2}$	π	0
$\frac{4\pi}{2}=2\pi$	$\frac{3\pi}{2}$	3



d) $y = -\csc(3x - \pi) + 2$

$-\csc 3(x - \frac{\pi}{3}) + 2$ amp = 1

max = 3

min = 1

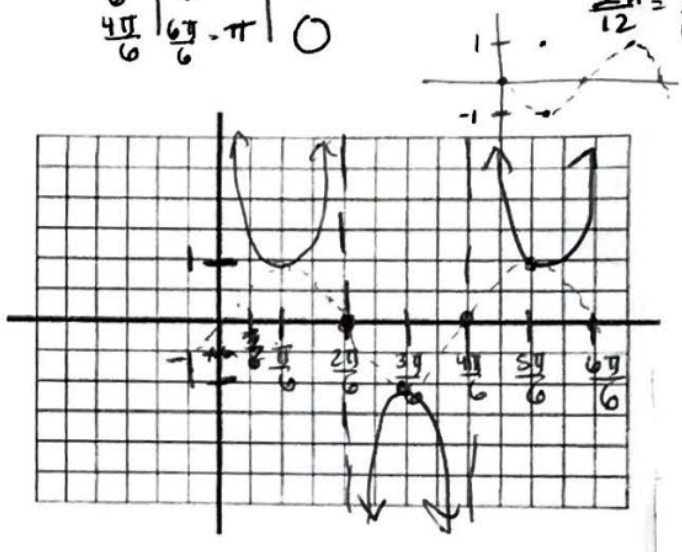
Period = $\frac{2\pi}{3}$

Inc = $\frac{2\pi}{3} \div 4 = \frac{2\pi}{12} = \frac{\pi}{6}$

$\frac{2\pi}{3} \cdot \frac{1}{4}$

$+\pi/3 = 2\pi/6$

X	New	
0	$\frac{2\pi}{6} = \frac{\pi}{3}$	0
$\frac{\pi}{6}$	$\frac{3\pi}{6} = \frac{\pi}{2}$	-1
$\frac{2\pi}{6}$	$\frac{4\pi}{6} = \frac{2\pi}{3}$	0
$\frac{3\pi}{6}$	$\frac{5\pi}{6}$	1
$\frac{4\pi}{6}$	$\frac{6\pi}{6} = \pi$	0



e) $y = 2\tan\frac{x}{3} + 2$ → $2\tan\frac{1}{3}x + 2$ (AHMA)

Period: $\frac{\pi}{1/3} = \pi \cdot 3 = 3\pi$

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

amp = 2

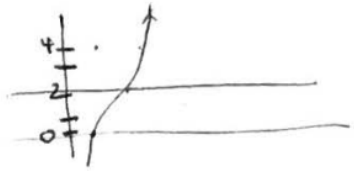
PB: none

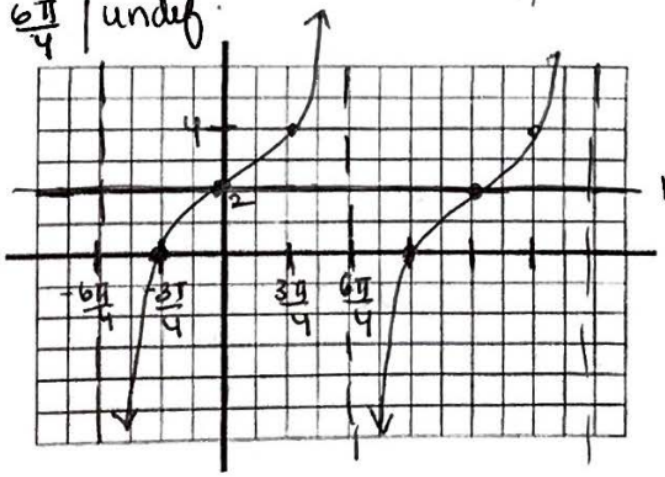
VS: 2

max: 4

min: 0

X	
$-\frac{6\pi}{4}$	undef
$-\frac{3\pi}{4}$	0
0	2
$\frac{3\pi}{4}$	4
$\frac{6\pi}{4}$	undef





K = 2

f) $y = 4\cot\left(x + \frac{\pi}{4}\right) + 1$ → (AHMLA)

Period: π

Inc: $\pi/4$

amp: 4

P.S: $-\pi/4$

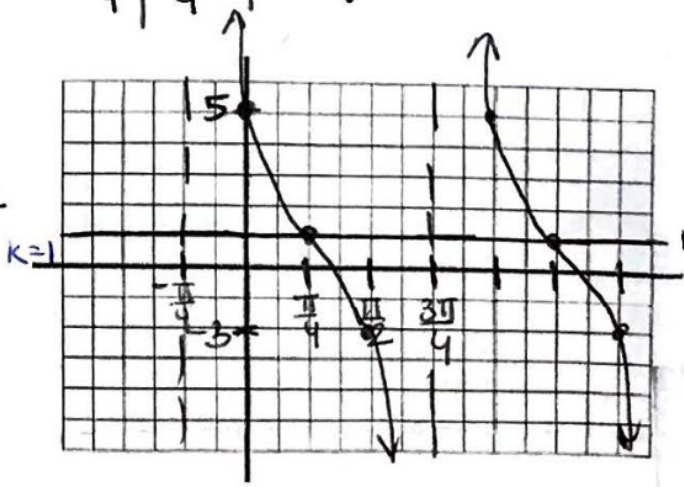
V.S: 1

max: 5

min: -3

$-\frac{1}{4}$

X	New	
0	$-\pi/4$	undef
$\frac{\pi}{4}$	0	5
$\frac{2\pi}{4}$	$\pi/4$	1
$\frac{3\pi}{4}$	$\frac{2\pi}{4} = \frac{\pi}{2}$	-3
$\frac{4\pi}{4}$	$\frac{3\pi}{4}$	undef



K = 1

K = 1