pre-Calc
4.5 – 4.7 Test Review

Name________________
Date____________ Period______

Graph the following on a one period interval. Find the amplitude/vertical stretch, period, phase shift, and vertical shift. Identify any asymptotes in the graph.

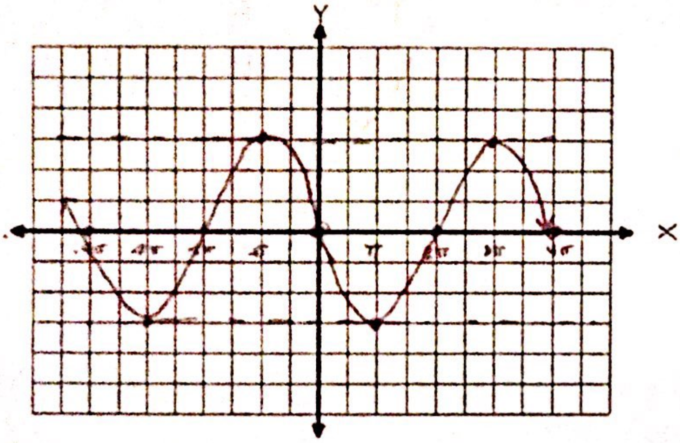
1.) $y = -3\sin\left(\frac{1}{2}x\right)$ Intervals: OBOTO : π

Amplitude: 3 Vertical Shift: None

Period: 4π Phase Shift: 0

$2 \cdot \frac{1}{2}x = 0 \cdot 2$

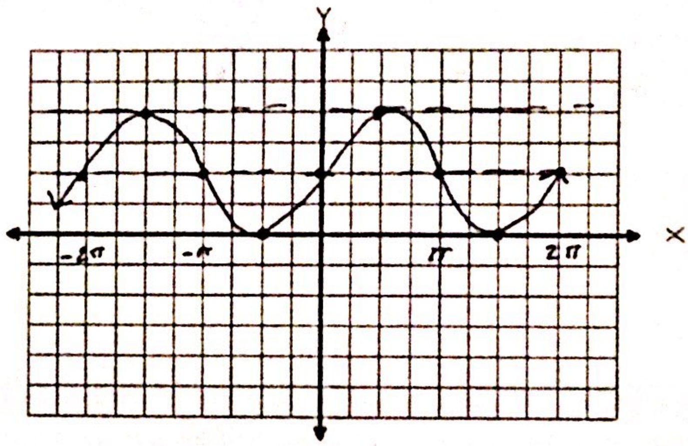
$x = 0$



2.) $y = 2\cos\left(x - \frac{\pi}{2}\right) + 2$ Intervals: TOBOT; $\frac{\pi}{2}$

Amplitude: 2 Vertical Shift: 2

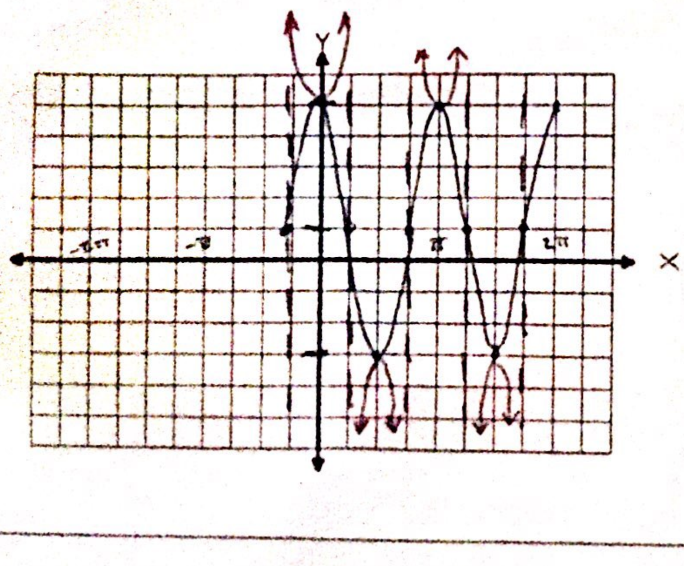
Period: 2π Phase Shift: $\frac{\pi}{2}$



3.) $y = 4\csc\left(2x + \frac{\pi}{2}\right) + 1$ Intervals: OTOBO ; $\frac{\pi}{4}$

Amplitude: 4 Vertical Shift: 1

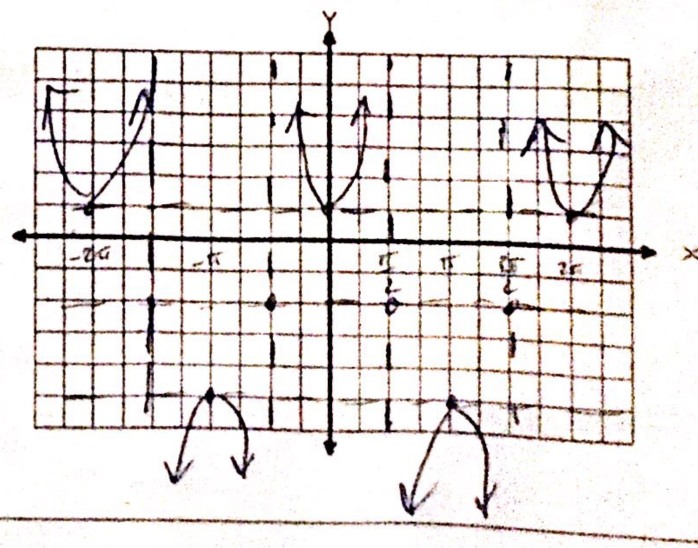
Period: π Phase Shift: $-\pi/4$



4.) $y = -3\sec(x + \pi) - 2$ Intervals: BOTOB ; $\frac{\pi}{2}$

Amplitude: 3 Vertical Shift: -2

Period: 2π Phase Shift: $-\pi$



Reflection

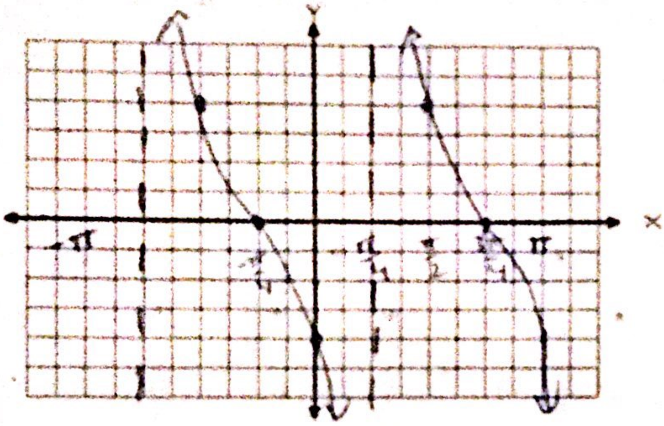
5.) $y = -4\tan\left(x + \frac{\pi}{4}\right)$ Intervals: TMB ; $\pi/4$

Amplitude: 4 Vertical Shift: X

Period: π Phase Shift: $-\pi/4$

Asymptotes: $x + \frac{\pi}{4} = \pi/2 + \pi n$

$x = \pi/4$



6.) $y = 3\cot\left(\frac{1}{2}x + \frac{\pi}{2}\right) - 1$ Intervals: TMB; $\pi/2$

Amplitude: 3 Vertical Shift: -1

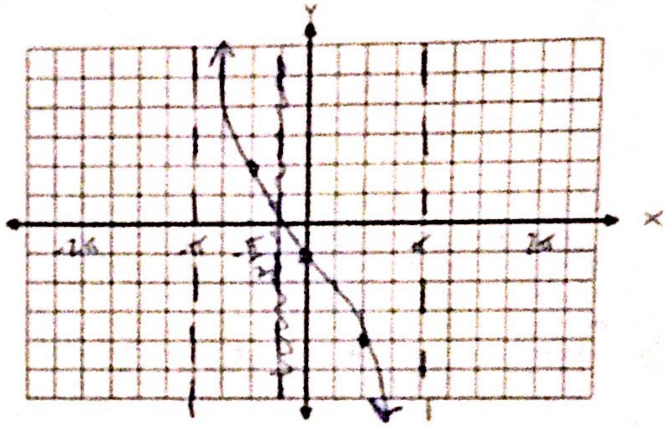
Period: 2π Phase Shift: $-\pi$

Asymptotes: $-\pi + 2\pi n$

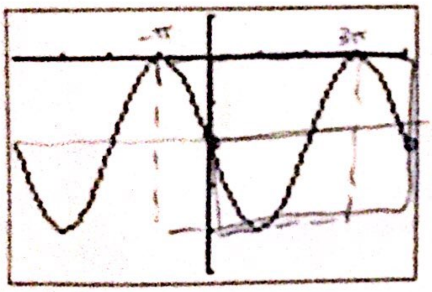
$\frac{1}{2}x + \frac{\pi}{2} = 0$

$2 \cdot \frac{1}{2}x = -\frac{2\pi}{2}$

$x = -\pi$



7.) ***Write a sine and cosine equation for the given graph. Box the period you used to write your equation. The x-intervals are π.***



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

$B = 1/2$

Phase Shift $= -\pi$

$d = -2$

$a = 2$

$y = 2\cos\left(\frac{1}{2}(x + \pi)\right) - 2$

$y = 2\cos\left(\frac{1}{2}x + \frac{\pi}{2}\right) - 2$

$y = -2\sin\left(\frac{1}{2}x\right) - 2$

8.) ***State the domain and range for each inverse trigonometric function.***

Function	Domain	Range	
$y = \arcsin x$	$[-1, 1]$	$[-\pi/2, \pi/2]$	Quad I, IV
$y = \arccos x$	$[-1, 1]$	$[0, \pi]$	Quad I, II
$y = \arctan x$	$(-\infty, \infty)$	$[-\pi/2, \pi/2]$	Quad I, IV

...uate the expression without using a calculator.*

...) $\arctan\frac{\sqrt{3}}{3}$

$\frac{\pi}{6}$

10.) $\arccos\left(-\frac{\sqrt{3}}{2}\right)$

$\frac{5\pi}{6}$

11.) $\arctan(-\sqrt{3})$

$-\pi/3$

12.) $\arcsin\left(-\frac{1}{2}\right)$

$-\pi/6$

13.) $\arcsin\frac{\sqrt{3}}{2}$

$\pi/3$

Use the properties of inverse trigonometric functions to evaluate the expression.

14.) $\cancel{\cos}[\cancel{\arccos}(-0.45)]$

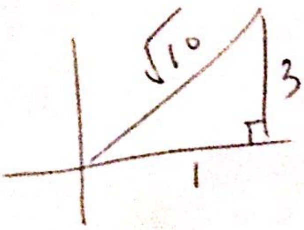
$-.45$

15.) $\arcsin\left[\sin\left(-\frac{5\pi}{2}\right)\right] = -\pi/2$

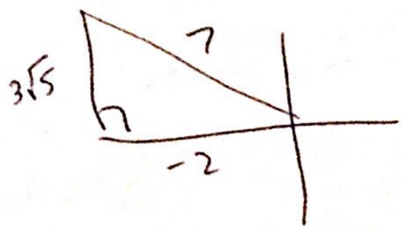
arcsin (-1)

Find the exact value of the expression without using a calculator.

16.) $\overset{H/A}{\sec}(\arctan\ 3) = \underline{\sqrt{10}}$



17.) $\overset{O/H}{\sin}\left[\arccos\left(-\frac{2}{7}\right)\right] = \underline{\frac{3\sqrt{5}}{7}}$

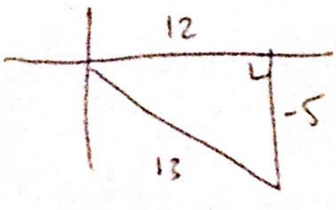


$(-2)^2 + b^2 = 7^2$

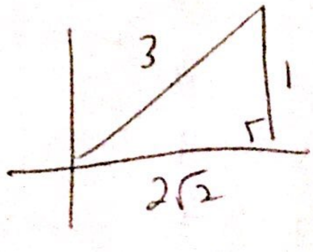
$b^2 = 45$

$b = \sqrt{45} = 3\sqrt{5}$

18.) $\overset{H/O}{\csc}\left[\arctan\left(-\frac{5}{12}\right)\right] = \underline{-13/5}$



19.) $\overset{O/A}{\tan}\left[\arcsin\left(\frac{1}{3}\right)\right] = \underline{\sqrt{2}/4}$



$1^2 + b^2 = 3^2$

$b^2 = 8$

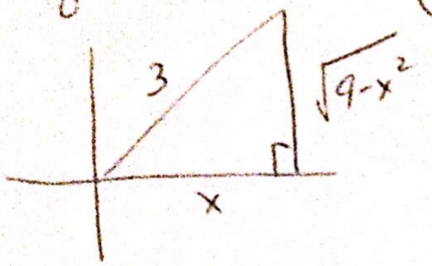
$b = \sqrt{8} = 2\sqrt{2}$

$\frac{1}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{4}$

Write an algebraic expression that is equivalent to the given expression.

20.) $\csc\left(\arccos\frac{x}{3}\right)$

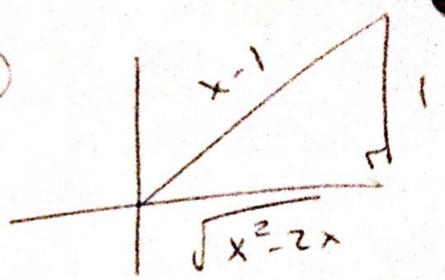
H/O



$\frac{3}{\sqrt{9-x^2}}$

21.) $\cot\left(\arcsin\frac{1}{x-1}\right)$

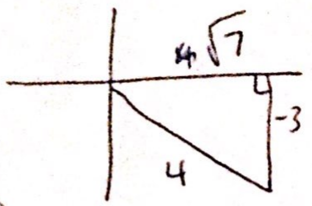
$\sqrt{x^2-2x}$



$1^2+b^2=(x-1)^2$
$1+b^2=x^2-2x+1$
$b^2=x^2-2x$
$b=\sqrt{x^2-2x}$

22.) $\tan\left(\arcsin\left(-\frac{3}{4}\right)\right)$

O/A



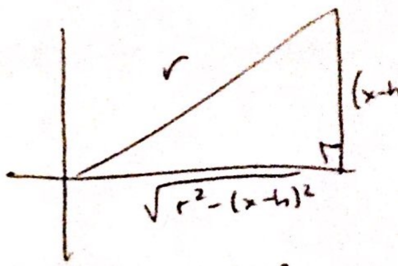
$\frac{-3}{\sqrt{7}}\cdot\frac{\sqrt{7}}{\sqrt{7}}$

$\frac{-3\sqrt{7}}{7}$

23.) $\cos\left(\arcsin\left(\frac{x-h}{r}\right)\right)$

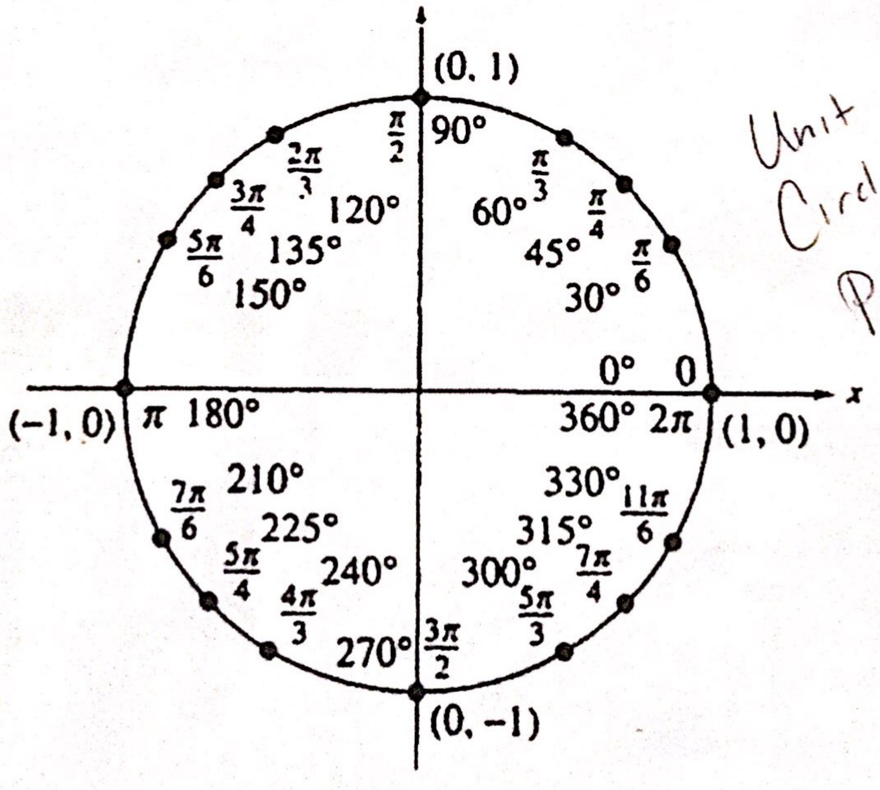
A/H

$\frac{\sqrt{r^2-(x-h)^2}}{r}$



$a^2+(x-h)^2=r^2$
$a^2=r^2-(x-h)^2$
$a=\sqrt{r^2-(x-h)^2}$

24.) ***Fill in the ordered pairs on the unit circle.***



Unit Circle is provided for test.