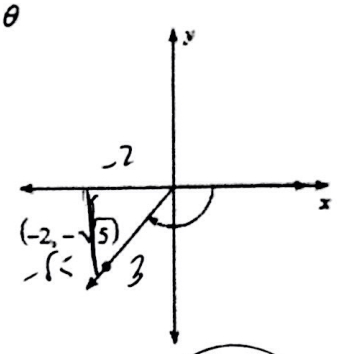
Honors Pre-Calc
Chapter 4 Test Review
Non-Calculator

Name Answer Key
Date_____ **Block**____

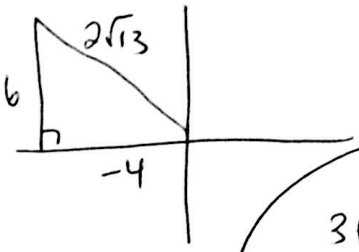
Draw a reference triangle and find the EXACT RATIO of the trig function indicated.

1. $\sec\theta$



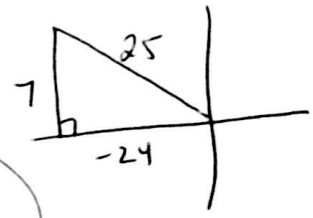
$-\frac{3}{2}$

2. $\sin\theta$ for $(-4, 6)$



$\frac{3\sqrt{13}}{13}$

3. Given $\csc\theta = \frac{25}{7}$ where $\frac{\pi}{2} < \theta < \pi$.
Find $\tan\theta$.



$-\frac{7}{24}$

WITHOUT USING THE UNIT CIRCLE OR TABLE!

Find the exact value.

4. $\sin 60°$ $\frac{\sqrt{3}}{2}$

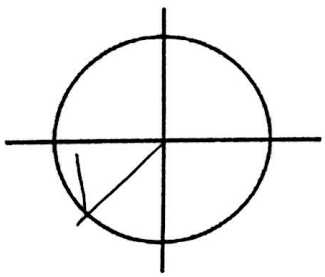
5. $\cos\left(-\frac{5\pi}{4}\right)$ $-\frac{\sqrt{2}}{2}$

If $0° \le \theta \le 360°$, then find θ

6. $\sin\theta = \frac{\sqrt{2}}{2}$ $\pi/4$
$45°, 135°$

7. $\cos\theta = -\frac{1}{2}$ $2\pi/3$
$120°, 240°$

8. Find all six trig functions. Fill in the table. **WITHOUT USING THE UNIT CIRCLE OR TABLE!**



radians	$\sin\theta$	$\cos\theta$	$\tan\theta$	$\csc\theta$	$\sec\theta$	$\cot\theta$
$\frac{4\pi}{3}$	$-\frac{\sqrt{3}}{2}$	$-1/2$	$\sqrt{3}$	$-\frac{2\sqrt{3}}{3}$	-2	$\sqrt{3}/3$

Use the table to find the EXACT value.

9. $\sec 300°$
2

10. $\sin\frac{5\pi}{4}$
$-\sqrt{2}/2$

Use the table to find the angle where $0° \le \theta \le 360°$.

11. $\cos\theta = -\frac{\sqrt{2}}{2}$
$135°, 225°$

12. $\csc\theta = -2$
$330°, 210°$

Graph the following on the interval [-2π,2π]. Find the amplitude/vertical stretch, period, phase shift, and vertical shift. Identify any asymptotes in the graph.

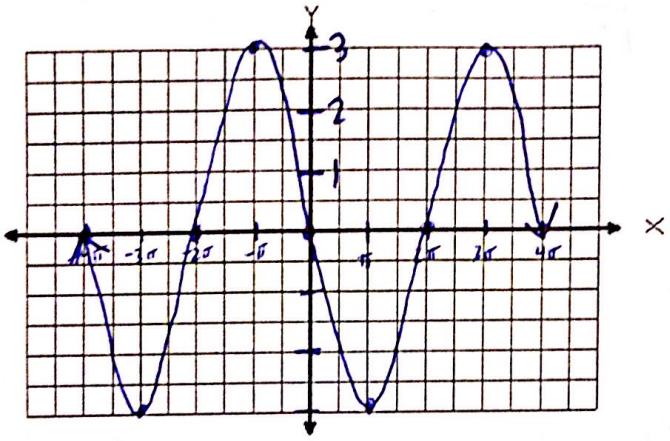
13.) $y = -3\sin\left(\frac{1}{2}x\right)$

OBOTO

$a = 3$

$P = \frac{2\pi}{1/2} = 4\pi$

Intervals $= \pi$



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

TOBOT

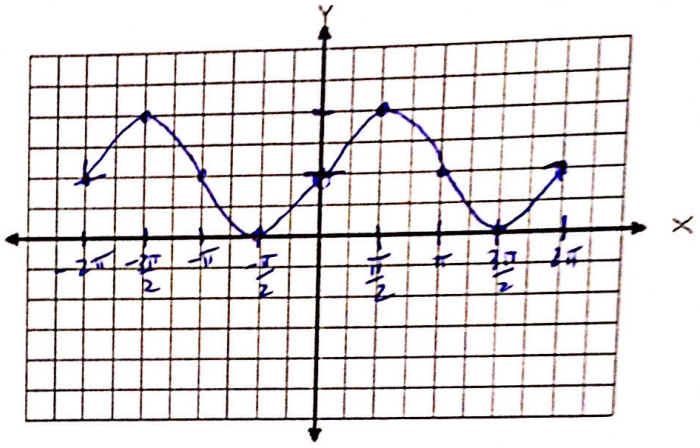
$a = 2$

P.S. right $\pi/2$

$P = 2\pi$

Up 2

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



15.) $y = 4\csc\left(2x + \frac{\pi}{2}\right) + 1$

Sin - OTOBO

$a = 4$

Up 1

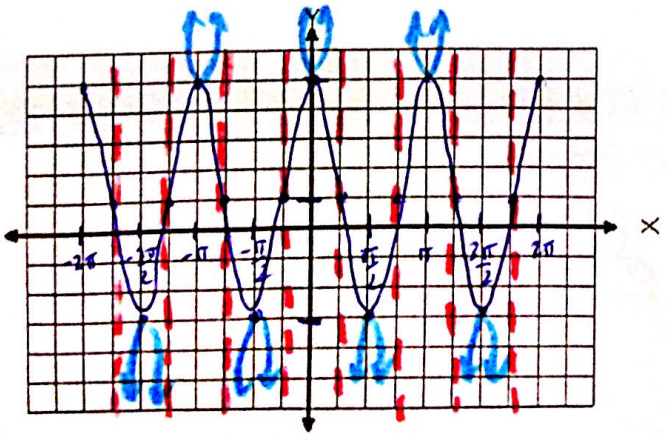
$\frac{2\pi}{2} = \pi$

$\frac{\pi}{4}$ - Intervals

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

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

$x = -\frac{\pi}{4}$



16.) $y = -3\sec(x + \pi) - 2$

$a = 3$

BOTOB

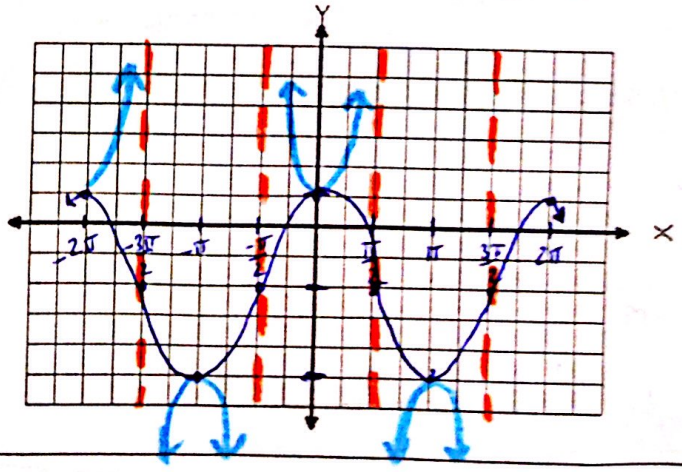
OBOTO

2π

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

$x = -\pi$

Down 2



17.) $y = -4\tan\left(x + \frac{\pi}{4}\right)$

$\frac{\pi}{4}$ - Intervals

$a = 4$

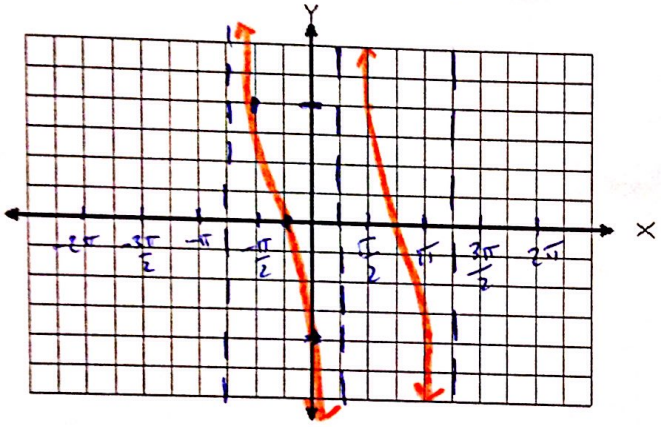
Tan B

$x + \frac{\pi}{4} = \frac{\pi}{2}$

Any $x = \frac{\pi}{4}$

$x + \frac{\pi}{4} = -\frac{\pi}{2}$

Any $x = -\frac{3\pi}{4}$



18.) $y = 3\cot\left(\frac{1}{2}x + \frac{\pi}{2}\right) - 1$

$a = 3$

2π = Period

$\frac{\pi}{2}$ - intervals

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

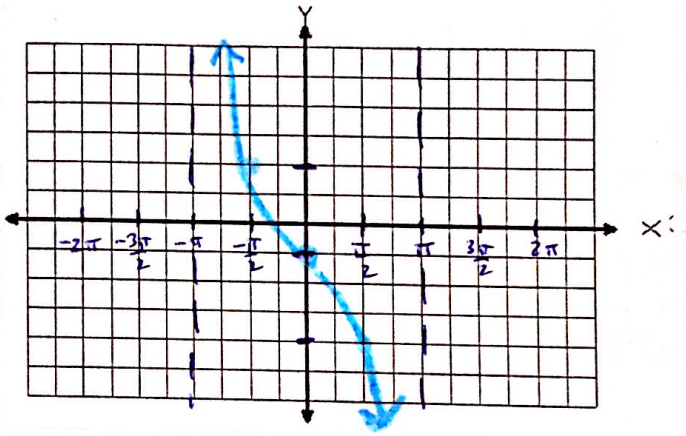
$\frac{1}{2}x = -\frac{\pi}{2}$

$x = -\pi$

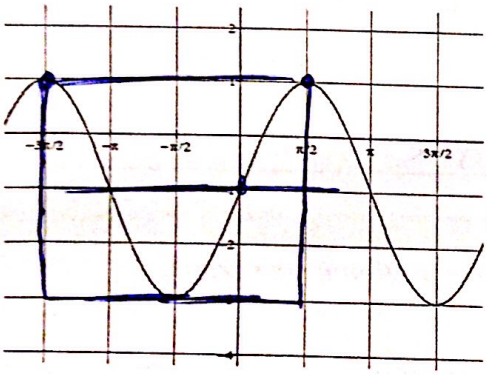
$\frac{1}{2}x + \frac{\pi}{2} = \pi$

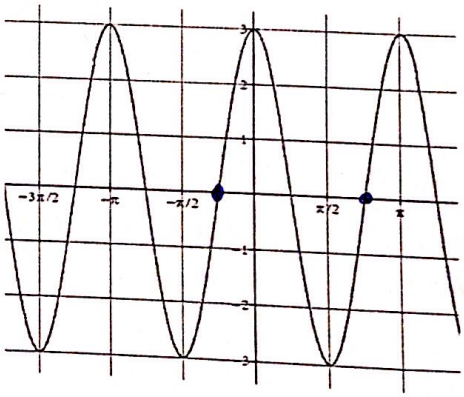
$\frac{1}{2}x = \frac{\pi}{2}$

$x = \pi$



Write the given function for each graph. Use a phase shift, not a reflection.





19.) Cosine: $f(x) = 2\cos\left(x + \frac{3\pi}{2}\right) - 1$

$2\pi = 2a$ Sunny Isaac?

20.) Sine: $f(x) = 3\sin\left(2x + \pi/2\right)$

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

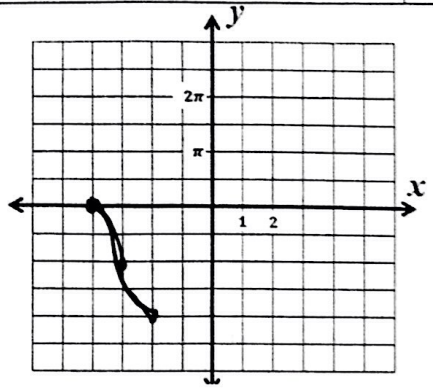
$\frac{-\pi}{4} = \frac{-c}{b}$

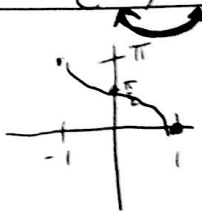
$\frac{-\pi}{2} = c$

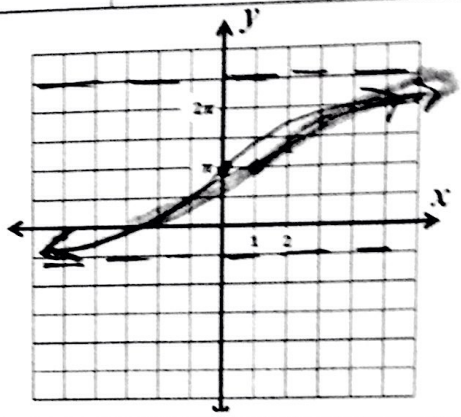
Graph the function. State the Domain & Range

Function	**21.)** $f(x) = 2\cos^{-1}(x+3) - 2\pi$	**22.)** $f(x) = 3\tan^{-1}(x-1) + \pi$
Domain VS. 2, Left 3, ↓ 2π	$[-4, -2]$	$(-\infty, \infty)$
Range	$[0, -2\pi]$	$(-\pi/2, 5\pi/2)$

Stretch horiz.

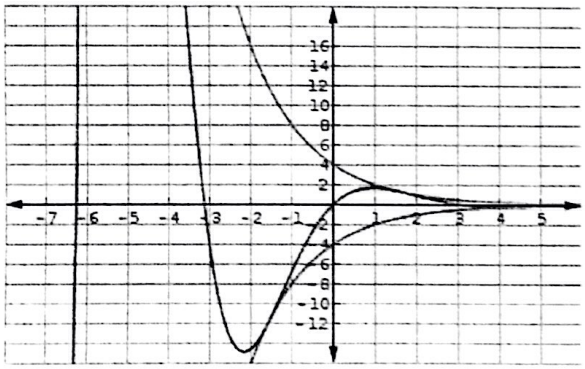


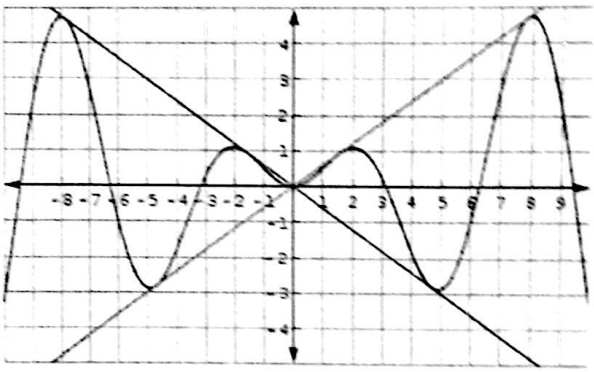




Write a SINE function.

Identify the damping factor and write an equation of the graph.





23.) Damping Factor: $4\cdot(1/2)^x$

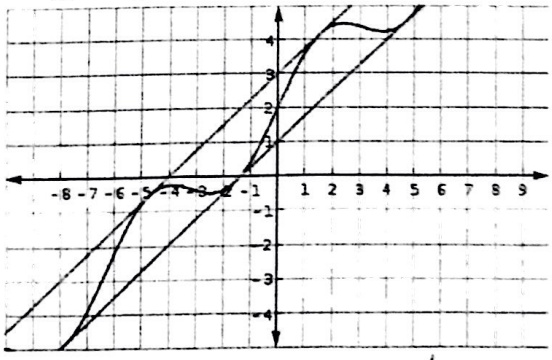
f(x): $4\left(\frac{1}{2}\right)^x \sin x$

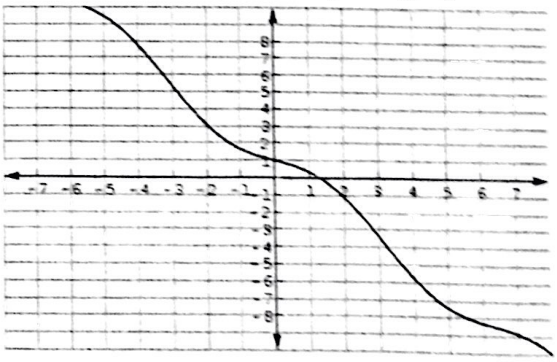
24.) Damping Factor: $3/5\,x$

f(x): $3/5\,x \sin x$

Write a SINE function.

Identify the parallel lines that the graph oscillates between and write an equation of the graph.





25.) Parallel Lines: $y = \frac{3}{4}x + 3$ / $y = \frac{3}{4}x + 1$

f(x): $y = \frac{3}{4}x + 2 + \sin x$

26.) Parallel Lines: $y = -\frac{3}{2}x$ $y = -\frac{3}{2}x + 2$

f(x): $y = -\frac{3}{2}x + 1 + \sin x$

Evaluate the expression.

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

$\pi/6$

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

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

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

$-\frac{\pi}{3}$

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

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

31.) $\sec(\arctan 3)$ H/A

$\sqrt{10}$

32.) $\sin\left[\arccos\left(-\frac{2}{7}\right)\right]$

$\frac{\sqrt{45}}{7} = \frac{3\sqrt{5}}{7}$

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

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

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

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

$= \sqrt{x(x-2)}$

$x^2-2x+1-1$

Solve the following equations for all solutions in the interval $[0,2\pi)$. ***You will need a calculator to solve for two of the solutions for #36.***

35.) $4\sin^2\theta - 1 = 0$

$4\sin^2\theta = 1$

$\sin^2\theta = 1/4$

$\sin x = \pm 1/2$

$x = \pi/6, 5\pi/6, 7\pi/6, 11\pi/6$

36.) $10\cos^2\theta + 3\cos\theta = 4$

$10\cos^2\theta + 3\cos\theta - 4 = 0$

$\cos\theta = -\frac{4}{5}$ $\quad \cos\theta = \frac{1}{2}$

$\theta = 2.498, 3.785$ $\quad \theta = \pi/3, 5\pi/3$

Write the linear combination of sine and cosine as a single cosine function with a phase shift.

37.) $f(\theta) = 4\cos\theta - 4\sin\theta$

$y = 5.66\cos\left(x + \frac{\pi}{4}\right)$

or

$5.66\cos\left(x - \frac{7\pi}{4}\right)$

38.) $f(\theta) = -5\sqrt{3}\cos\theta + 5\sin\theta$

$y = 10\cos\left(x - 5\pi/6\right)$