

1. State the amplitude, period, vertical shift, and phase shift for $y = 3 \sin (2x - \pi) + 4$
2. Draw a graph for number 1
3. Graph $y = \cos (x + 2\pi) - 1$
3. Use $\sin^2 x + \cos^2 x = 1$ to create the other 2 identities:

Use the ratio $\sin x = \frac{3}{4}$ to answer the following questions

4. $\cos x$
6. $\sec x$
5. $\tan x$
7. $\csc x$
8. Simplify the following:

$$\frac{\cot x}{\cos x}$$

$$(\sin x + \cos x)^2 - (\sin x - \cos x)^2$$

9. Verify the following

$$\frac{1 - \sin x}{\cos x} = \sec x - \tan x$$

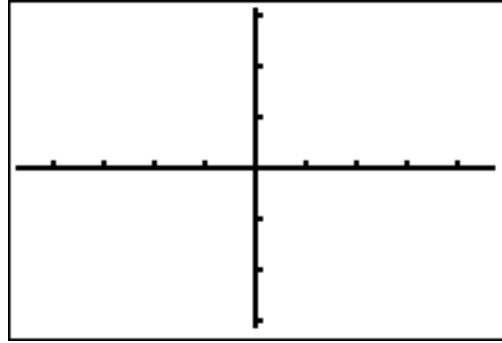
$$\tan x = \sqrt{\sec^2 x - 1}$$

Use the graph for questions 10-12

10. graph $g(x)$ $g(x) = \begin{cases} -x^2 & \text{if } x < -1 \\ x^2 - 2 & \text{if } -1 \leq x \leq 1 \\ -x^2 & \text{if } x > 1 \end{cases}$

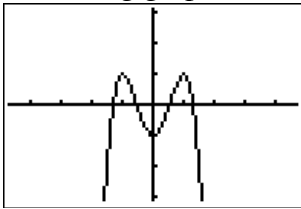
11. Is $g(x)$ continuous at $x = -1$?

12. Is $g(x)$ continuous at $x = 1$?



13. Draw a sine curve. Then draw a second sine curve with twice the amplitude.

Use the following graph to answer questions 14-17



14. State the end behavior of each.

15. State if each represents an even or odd degree function

16. State the intervals of increasing and decreasing for the graphs above

17. State all min and max values

18. State the domain for the equation $y = \frac{3}{x-2}$

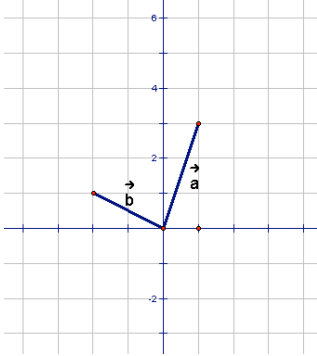
19. State the domain for the equation $y = \sqrt{x+3}$

20. Find the values of the following:

$$\sin^2(2\pi)$$

$$\cos^2(\pi)$$

Use the graph of vectors **a** and **b** to answer questions 21-22



21. Write the resultant vector of **a** and **b** algebraically.

22. State the answer to $3\mathbf{a} + \mathbf{b}$ algebraically.

23. The magnitude of vector **m** is 12 and the direction is 40 degrees north of east. Find the vertical and horizontal components of vector **m**.

24. Vectors **a** and **b** are perpendicular. If $\mathbf{a} = \langle 2, x \rangle$ then state a possible algebraic vector for **b** and describe how you know they are perpendicular.

25. Two forces are being applied to an object. The first force is 400 Newtons in the direction of the x -axis. The second is 250 newtons and makes an angle of 63 degrees to the first force.
- State the resultant vector as an ordered pair.
 - Find the magnitude and direction of the resultant.

26. Which trig functions are symmetric about the y -axis?

1. State the amplitude, period, vertical shift, and phase shift for $y = 3 \sin(2x - \pi) + 4$

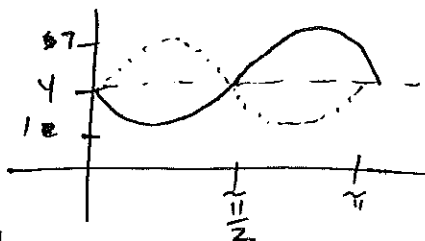
per = $\frac{2\pi}{K} = \pi$

shift = $\frac{-C}{K} = \frac{\pi}{2}$

amp ↑

vert. shift ↑

2. Draw a graph for number 1

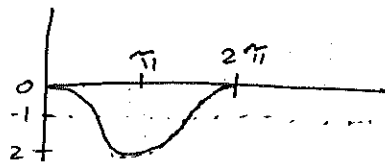


3. Graph $y = \cos(x + 2\pi) - 1$

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

vert. ↑

shift $-\frac{2\pi}{1}$



3. Use $\sin^2 x + \cos^2 x = 1$ to create the other 2 identities:

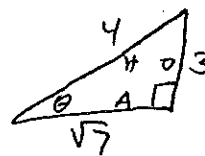
$1 + \cot^2 x = \csc^2 x$

$\tan^2 x + 1 = \sec^2 x$

Use the ratio $\sin x = \frac{3}{4}$ to answer the following questions

4. $\cos x = \frac{\sqrt{7}}{4}$

6. $\sec x = \frac{4\sqrt{7}}{7}$



5. $\tan x = \frac{3\sqrt{7}}{7}$

7. $\csc x = \frac{4}{3}$

8. Simplify the following:

$\frac{\cot x}{\cos x}$

$\frac{\cos x}{\sin x} \cdot \frac{1}{\cos x} = \frac{1}{\sin x} = \csc x$

$(\sin x + \cos x)^2 - (\sin x - \cos x)^2$

$\sin^2 x + 2\sin x \cos x + \cos^2 x - (\sin^2 x - 2\sin x \cos x + \cos^2 x)$
 $4\sin x \cos x$

9. Verify the following

$\cos x \left[\frac{1 - \sin x}{\cos x} = \sec x - \tan x \right]$

$1 - \sin x = 1 - \sin x$

$(\tan x)^2 = (\sqrt{\sec^2 x - 1})^2$

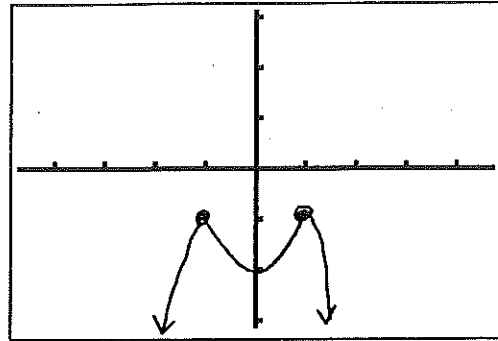
$\tan^2 x = \sec^2 x - 1$

$1 + \tan^2 x = \sec^2 x$

$\sec^2 x = \sec^2 x$

Use the graph for questions 10-12

10. graph $g(x) = \begin{cases} -x^2 & \text{if } x < -1 \\ x^2 - 2 & \text{if } -1 \leq x \leq 1 \\ -x^2 & \text{if } x > 1 \end{cases}$



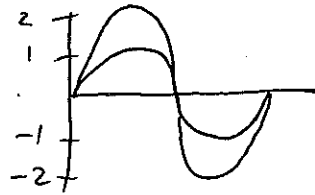
11. Is $g(x)$ continuous at $x = -1$?

yes

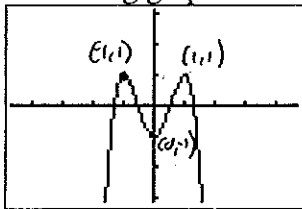
12. Is $g(x)$ continuous at $x = 1$?

yes

13. Draw a sine curve. Then draw a second sine curve with twice the amplitude.



Use the following graph to answer questions 14-17



14. State the end behavior of each.

$$x \rightarrow \infty \quad y \rightarrow -\infty$$

$$x \rightarrow -\infty \quad y \rightarrow -\infty$$

15. State if each represents an even or odd degree function

even

16. State the intervals of increasing and decreasing for the graphs above

$$\text{Inc.} : (-\infty, 1] \cup [0, 1]$$

$$\text{Dec.} : [-1, 0] \cup [1, \infty)$$

17. State all min and max values

$(0, -1)$ $(1, 1) + (-1, 1)$

18. State the domain for the equation $y = \frac{3}{x-2}$

$$x \neq 2$$

19. State the domain for the equation $y = \sqrt{x+3}$

$$x \geq -3$$

20. Find the values of the following:

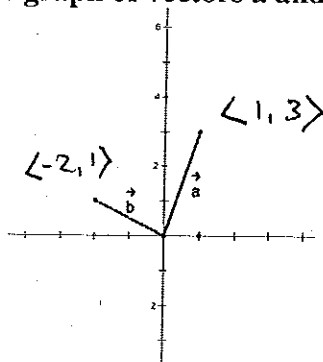
$$\sin^2(2\pi)$$

$$0^2 = 0$$

$$\cos^2(\pi)$$

$$(-1)^2 = 1$$

Use the graph of vectors a and b to answer questions 21-22



21. Write the resultant vector of a and b algebraically.

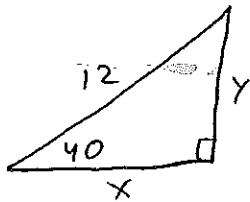
$$\langle -2, 1 \rangle + \langle 1, 3 \rangle = \langle -1, 4 \rangle$$

22. State the answer to $3a + b$ algebraically.

~~$$3\langle 1, 3 \rangle + \langle -2, 1 \rangle = \langle 1, 10 \rangle$$~~

$$3\langle 1, 3 \rangle + \langle -2, 1 \rangle = \langle 1, 10 \rangle$$

23. The magnitude of vector m is 12 and the direction is 40 degrees north of east. Find the vertical and horizontal components of vector m.



$$x = 12 \cos 40 = 9.2$$

$$y = 12 \sin 40 = 7.7$$

~~$$\langle 9.2, 7.7 \rangle$$~~

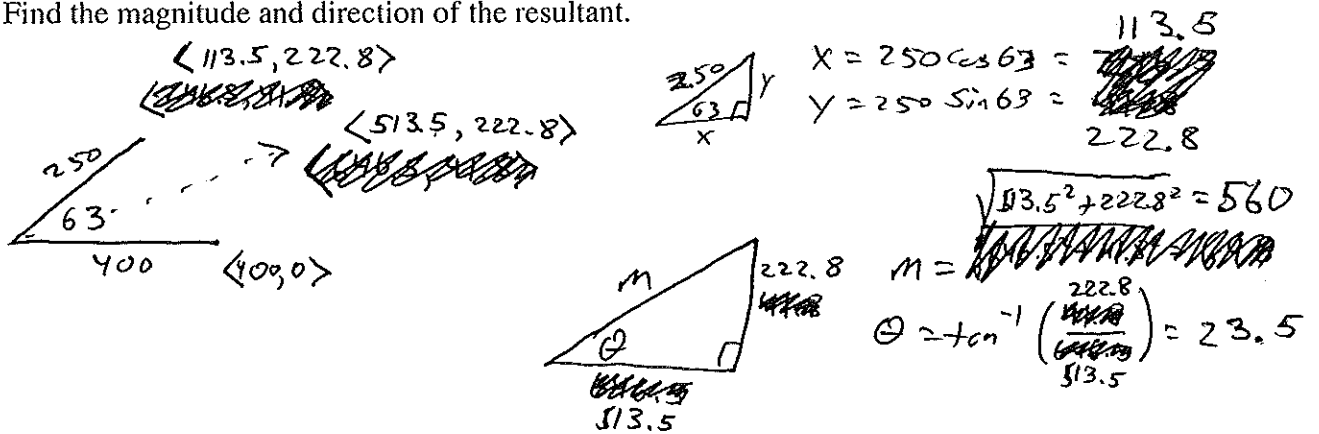
$$\langle 9.2, 7.7 \rangle$$

24. Vectors a and b are perpendicular. If $a = \langle 2, x \rangle$ then state a possible algebraic vector for b and describe how you know they are perpendicular.

if $b = \langle x, -2 \rangle$ then inner product
is $2 \cdot x + -2 \cdot x = 0$ so they are \perp .

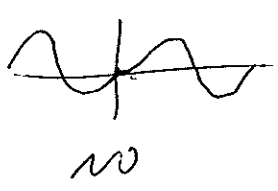
if $b = \langle -x, 2 \rangle \dots$

25. Two forces are being applied to an object. The first force is 400 Newtons in the direction of the x-axis. The second is 250 newtons and makes an angle of 63 degrees to the first force.
- State the resultant vector as an ordered pair.
 - Find the magnitude and direction of the resultant.

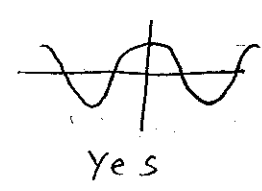


26. Which trig functions are symmetric about the y-axis?

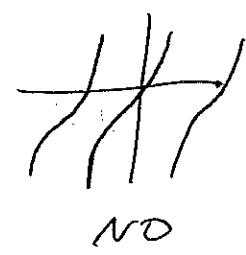
Sin



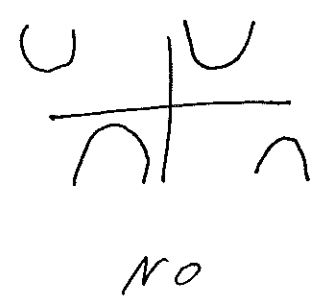
cos



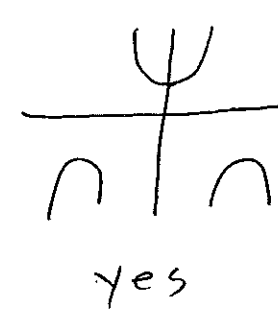
tan



csc



~~sec~~
sec



cot

