

NO CALCULATOR!

1. Show that the point $\left(-\frac{2\sqrt{2}}{3}, -\frac{1}{3}\right)$ is on the unit circle.

Reminder for #1 and #2: equation of a circle with center at origin is $x^2 + y^2 = r^2$

2. The point P(x, y) is on the unit circle in Quadrant III. If $x = -\frac{\sqrt{11}}{6}$, find y.

3. Find the **reference angle** and the **terminal point** P(x, y) determined by $t = \frac{11\pi}{6}$

4. Find the exact values using the unit circle:

a) $\sin \frac{9\pi}{2}$ b) $\cos\left(-\frac{9\pi}{2}\right)$ c) $\tan \frac{5\pi}{3}$ d) $\csc\left(-\frac{11\pi}{4}\right)$ e) $\sec \frac{3\pi}{4}$ f) $\cot\left(-\frac{7\pi}{4}\right)$

5. Find **tant** given that $\sin t = -\frac{3}{4}$ and $\cos t < 0$. (*Sketch a triangle in the proper quadrant.*)

6. Find the other 5 trig function values if $\sec t = 3$ and the terminal point of t is in Quad IV.

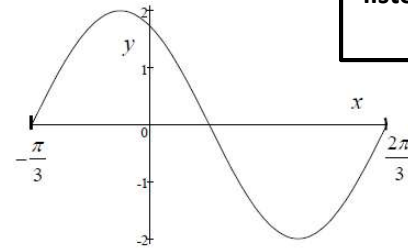
7. a) State the amplitude, period, and horizontal shift of the function $y = 2\cos\left(\frac{1}{2}x - \frac{\pi}{6}\right)$

b) State the amplitude, period, and horizontal shift of the function $y = -3\tan\left(2x + \frac{\pi}{4}\right)$

8. Find the exact value using principal values. Show both steps!

a) $\tan\left(\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right)$ b) $\cos\left(\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right)$ c) $\sin(\tan^{-1}(1))$

9. The graph shown at right is one period of a function of the form $y = a \sin k(x - b)$. Determine the equation of the function.



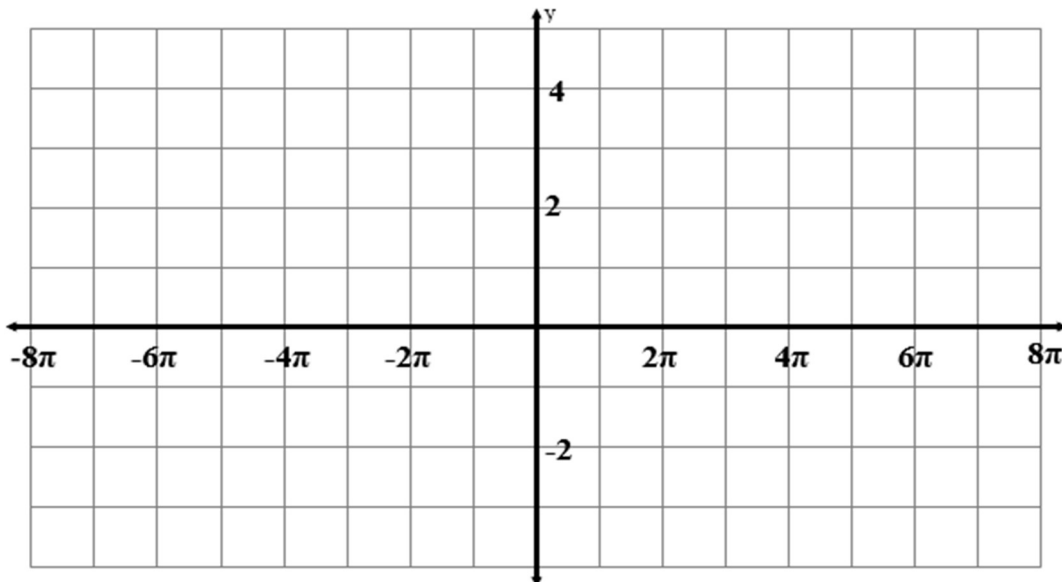
10. Identify the vertical shift, amplitude, period, and horizontal shift. Sketch a complete graph from -8π to 8π .

$y = -2\sec\left(\frac{1}{3}x - \frac{2\pi}{3}\right) + 1$ Factored form \rightarrow

CHECK ANSWERS:

$-\sqrt{2}$	$-\sqrt{2}$
$-2\sqrt{2}$	$-\sqrt{3}$
$\frac{3\sqrt{2}}{4}$	$-\frac{\sqrt{3}}{3}$
$\frac{2\sqrt{2}}{3}$	$-\frac{\sqrt{2}}{4}$
$\frac{3\sqrt{7}}{7}$	$\frac{\sqrt{2}}{2}$
0	1
1	2
$\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$	3
$-\frac{5}{6}$	$\frac{1}{3}$
$-\frac{\pi}{8}$	$\frac{\pi}{2}$
2π	4π
$\frac{\pi}{3}$	$\frac{\pi}{6}$
6π	2π

#9,10 equations listed on key for graph

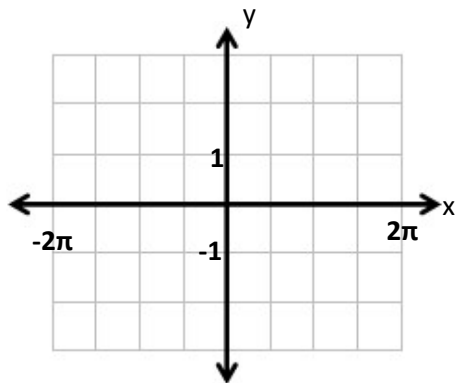


v.s. =
amp =
per =
h.s. =

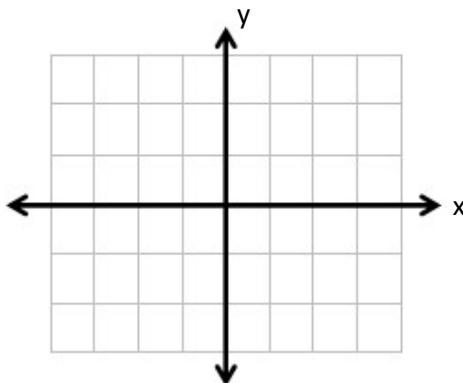
REMINDER: Reflect (flip) your graph across the x-axis!!!

11. QUIZ YOURSELF! Without referring to other handouts or notes, sketch a graph for each of the six trig functions. Be sure to plot all key points for the given interval: $-2\pi \leq x \leq 2\pi$.

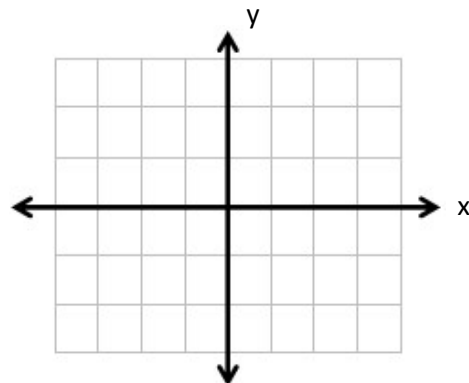
a. $y = \sin x$



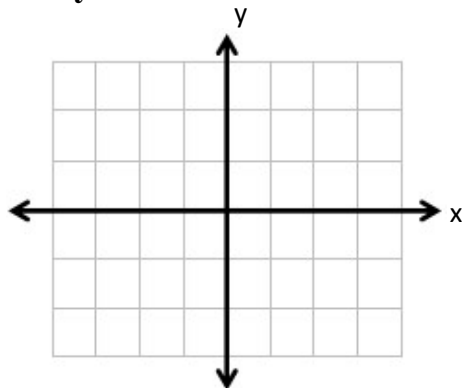
b. $y = \cos x$



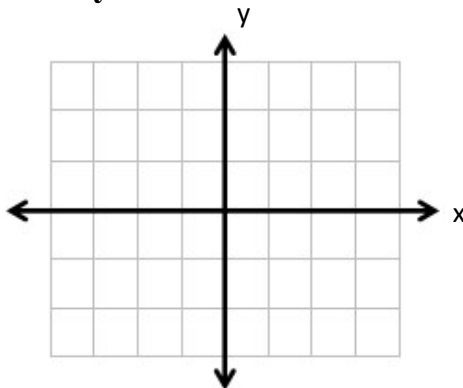
c. $y = \tan x$



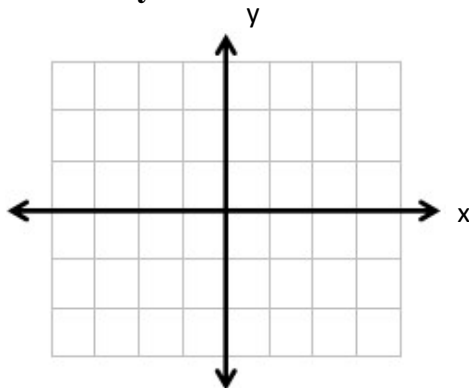
d. $y = \csc x$



e. $y = \sec x$



f. $y = \cot x$



Find each value by referring to the graphs of the six trig functions:

12. $\cot \frac{7\pi}{4}$

13. $\sec\left(-\frac{5\pi}{2}\right)$

14. $\cos(-6\pi)$

15. $\csc 3\pi$

16. $\tan \frac{\pi}{4}$

17. $\cos \pi$

18. $\sin \frac{3\pi}{2}$

19. $\sin\left(-\frac{7\pi}{2}\right)$

20. $\tan\left(-\frac{3\pi}{2}\right)$

21. $\sec 4\pi$

22. $\cot \frac{3\pi}{2}$

23. $\csc\left(-\frac{7\pi}{2}\right)$

Find the values of θ for which each equation is true, given that $-\pi \leq \theta \leq \pi$.

Hint: there may be more than one solution.

24. $\tan^{-1}(0)$ rewrite \rightarrow _____ = 0 (now solve!)

25. $\cot \theta = 0$

26. $\csc^{-1}(1)$ rewrite \rightarrow _____ = 1 (now solve!)

27. $\sec \theta = -1$

**CHECK
ANSWERS
FOR #12-27:**

-1 -1 -1 0

1 1 1 1 1

undefined

undefined

undefined

$-\pi$ $-\pi$

$-\frac{\pi}{2}$ 0

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

π π

$\csc \theta$ $\tan \theta$