

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

NON-CALCULATOR SECTION

Vocabulary: Define each word and give an example.

1. periodicity
2. frequency
3. radian

Short Answer:

4. Explain how to rewrite a sine function as a cosine function.
5. Which trigonometric functions are even functions? Explain.
6. How do you convert from radians to degrees? Explain.

Review:

7. Solve the equation:  $\ln(3x+4) - \ln(2x+1) = 5$

Problems:

\*\*Be sure to show all work used to obtain your answer. Circle or box in the final answer.\*\*

8. Determine the measure of an angle  $\theta$  coterminal to an angle of  $-120^\circ$  if  $360^\circ \leq \theta \leq 720^\circ$ .
- .
9. The point  $(2, -2)$  is on the terminal side of an angle in standard position. Give the smallest positive angle measure in both degrees and radians.

10. Evaluate exactly:

a.  $\sec \frac{4\pi}{3}$

b.  $\sin \frac{3\pi}{4}$

c.  $\tan 270^\circ$

11.  $x$  is an angle in standard position with  $0 \leq x \leq 2\pi$ . Determine the quadrant of  $x$  if  $\sec x < 0$  and  $\tan x < 0$ .

12. Use transformations to describe how that graph of the function is related to a basic trigonometric graph. Graph two periods. Label the axes.  $y = 3 - 2 \sin(2x + \pi)$

13. State the amplitude, period, phase shift, vertical translation, domain and range for the sinusoid.  $y = 3 \sin\left(\frac{1}{2}x - \pi\right) - 3$

14. What are the vertical asymptotes for the graph of  $y = \sec x$ ?

15. Find the period of  $y = \tan \frac{1}{2}x$ .

16. Construct a sinusoid with period  $\frac{\pi}{8}$ , an amplitude of 5, and goes through the point  $(-1, 0)$ .

17. Find the exact value:

a.  $\cos^{-1}\left(\frac{1}{2}\right)$

b.  $\sin\left(\cot^{-1}\frac{1}{\sqrt{3}}\right)$

c.  $\arcsin\left(\cos\frac{4\pi}{3}\right)$

d.  $\cot^{-1}(\sin 2\pi)$

e.  $\sec\left(2\sin^{-1}\frac{\sqrt{3}}{2}\right)$

Trigonometry/Precalculus H Practice Test  
Unit 4: Trigonometry

Name: \_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_

## CALCULATOR SECTION

18. Convert from decimal form to DMS.  $34.59^\circ$
19. Find the perimeter of a  $65^\circ$  piece of pizza if the radius is 9 inches.
20. Solve the right triangle  $\triangle ABC$  for all its unknown parts if  $\alpha = 32^\circ$  and  $a = 5.2$ .
21. Find  $\csc \theta$  and  $\tan \theta$  if  $\cos \theta = -\frac{3}{7}$  and  $\sin \theta > 0$ .
22. State the domain, range, and period of the function  $y = |\tan x|$ .
23. State whether or not the function appears to be periodic.  $f(x) = 3|\sin(2x)| - 4x + 1$
24. Use transformations to describe the graph of the function in terms of a basic trigonometric function. Find the vertical asymptotes and graph two periods of the function:  $y = 2 + 3\csc(2x)$

25. State whether  $y = 3 \sin 3x + 4 \cos 3x$  would be a sinusoid.
- Why or why not?
  - Find the period, domain, and range of this function.
  - Find  $a$ ,  $b$ , and  $h$  so that  $f(x) = a \sin(b(x-h))$ . Write the equation of the sinusoid in this form after finding  $a$ ,  $b$ , and  $h$ .
26. Use a calculator to find the approximate value of  $\cot^{-1}(.254)$ . Express your answer in degrees.
27. Use a calculator to find the approximate value of  $\sin^{-1}(-.4)$ . Express your answer in radians.
28. From a distance of 20 feet away from the base, the angle of elevation to the top of a tree is  $43^\circ$ . How tall is the tree?

29. An airplane flies out of Kennedy Airport at a speed of 450 mph and a course of  $320^\circ$ . After traveling 30 minutes, it changes to a course of  $230^\circ$  and flies for another hour. What is the plane's bearing and distance from Kennedy Airport?
30. From the ground, Sandy observes an airplane coming toward her. The angle of elevation changes from  $25^\circ$  to  $65^\circ$  during the period of observation. If the plane's altitude is 2500 feet during the entire period of observation, how far does the plane travel?
31. A ramp leading to a freeway overpass is 705 ft long and rises 48 ft. What is the average angle of inclination of the ramp to the nearest tenth of a degree?