

READ THESE DIRECTIONS BEFORE STARTING THE EXAM

- ❖ Write your name below on the space provided.
- ❖ This test has a total of 5 pages.
- ❖ The last page is a formula sheet and scrap paper. Feel free to tear this page off.
- ❖ Work the problem in the space provided. If you need more space, write on the back of the test.
- ❖ To insure maximum credit, show your work. In general, full credit will not be given for unsupported answers.
- ❖ Look only at your test. Don't give the impression that you are cheating.
- ❖ Be sure to write neatly and in pencil. If I cannot read what was written, do not expect the problem to be graded.
- ❖ If you finish early, go over the test again.

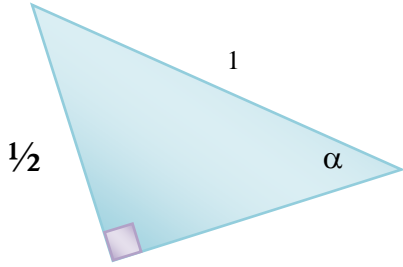
Good luck!

Number	Maximum	Score
1	8	
2	2	
3	6	
4	1	
5	6	
6	6	
7	6	
8	9	
9	8	
10	12	
11	2	
12	12	
13	22	
Total	100	

Name \_\_\_\_\_

**Circle Final Answers**

1) (8 points) For the right triangle below, find the exact value of the six trigonometric functions for the angle  $\alpha$ . Simplify as needed:



$\sin \alpha =$                        $\csc \alpha =$

$\cos \alpha =$                        $\sec \alpha =$

$\tan \alpha =$                        $\cot \alpha =$

2) (2 points) What is the measurement of the angle  $\alpha$  from number 1? \_\_\_\_\_

3) (1 point each) Fill in the blank:

a) The sine function is the \_\_\_\_\_ to cosine but the \_\_\_\_\_ of cosecant.

b) The cosine function is the \_\_\_\_\_ to sine but the \_\_\_\_\_ of secant.

c) The tangent function is the \_\_\_\_\_ and the \_\_\_\_\_ of cotangent.

4) (1 point) If  $\sin p = 0.2367$  where  $p$  is acute, then the value of  $\cos(90^\circ - p)$  is \_\_\_\_\_.

5) (3 points each) Given that  $\cos \theta = 0.2935$ , find the value of  $\theta$  rounded to two decimal places if...

a)  $\theta$  is in Quadrant I

b)  $\theta$  is in Quadrant IV

6) (6 points) Two planes leave an airport going in different directions. The first plane travels at 350 miles per hour at a bearing of  $N43.3^\circ E$ . The second plane travels at 350 miles per hour at a bearing of  $S46.7^\circ E$ . How far apart are the planes after 3 hours? Draw a picture and round answer to 2 decimal places:

7) (6 points) For the angle  $\theta$  in Quadrant IV where  $\cos \theta = \frac{5}{13}$ , find the 5 other trig functions:

$\sin \alpha =$                        $\csc \alpha =$

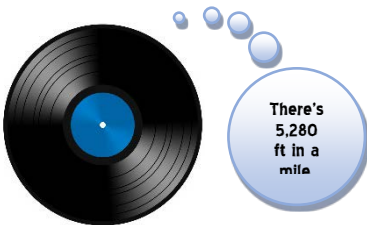
$\cos \alpha =$                        $\sec \alpha =$

$\tan \alpha =$                        $\cot \alpha =$

8) (3 points each) Convert as directed. Round **only** part *a* to 4 decimal places:

- a)  $7^{\circ}35'20''$  to Degrees                      b)  $\frac{7\pi}{6}$  to Degrees                      c)  $18^{\circ}$  to Radians

9) (8 points) A 12-inch diameter LP makes  $33\frac{1}{3}$  revolutions per minute. Determine the linear speed of a point on the tip of the record in miles per hour. Round to two decimal places:



10) (1 points each) Fill in the blank with the words “even” or “odd” to describe the type of function and then the correct values for the period:

	Type of Function	Period		Type of Function	Period
<i>Sine</i>			<i>Cosecant</i>		
<i>Cosine</i>			<i>Secant</i>		
<i>Tangent</i>			<i>Cotangent</i>		

11) (2 points) Concerning the graph of  $\cot \theta = \frac{\cos \theta}{\sin \theta}$ , when  $\sin \theta = 0$ , the graph of  $\cot \theta$  had \_\_\_\_\_ and when  $\cos \theta = 0$ , the graph of  $\cot \theta$  had \_\_\_\_\_.

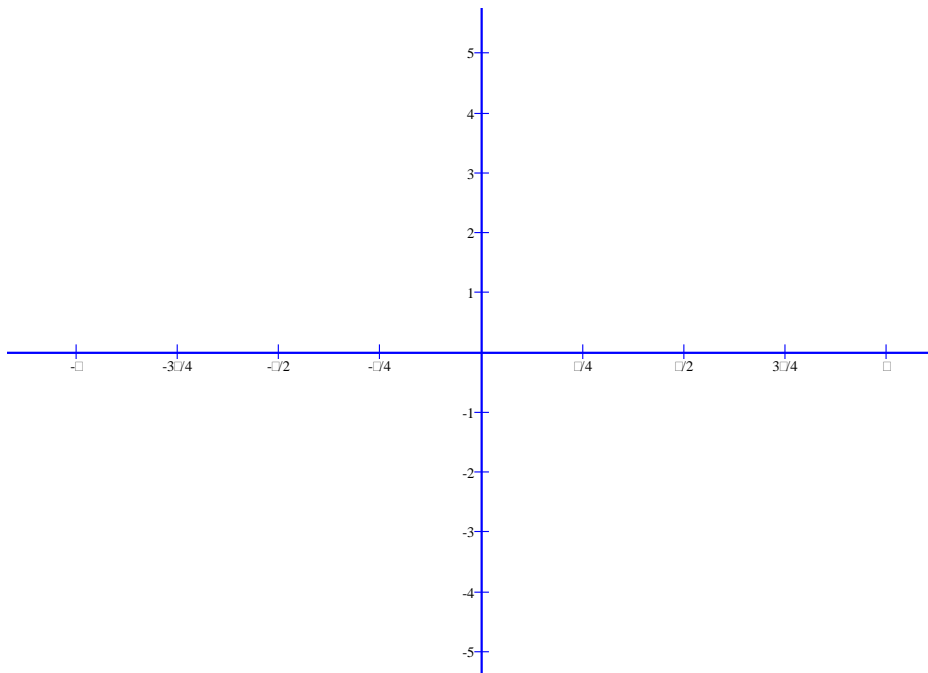
12) (3 points each) Given the point  $\left(\frac{\pi}{4}, \frac{\sqrt{2}}{2}\right)$  on the graph of  $y = \cos \theta$ , find the **exact value** of the coordinates of the point under the transformation below:

- a)  $y = -2 \cos \theta$       b)  $y = \cos\left(\theta - \frac{\pi}{4}\right)$       c)  $y = \cos(3\theta)$       d)  $y = \cos \theta + 3$

13) For the function  $y = 3 \sin\left(2\theta - \frac{\pi}{2}\right)$ :

a) (3 points) Write the steps needed to graph the transformation:

b) (9 points) Sketch a graph of the function below. Fill in the whole axis from  $[-\pi, \pi]$ :



c) (2 points each) Determine the following:

- i) Domain      ii) Range      iii) Amplitude      iv) Phase Shift      v) Period

# Chapter 6 Formulas

**Arc Length:**  $s = r\theta$

**Linear Speed:**  $v = \frac{s}{t}$

**Angular Speed:**  $\omega = \frac{\theta}{t}$

**Linear Speed:**  $v = r\omega$

in terms of radius and angular speed

Practice Graphs Below—Copy Final Graph to Test

