MATH 1540 Fall 2018 **Mike McCraith**
Exam 1 **September 25, 2018**

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.**

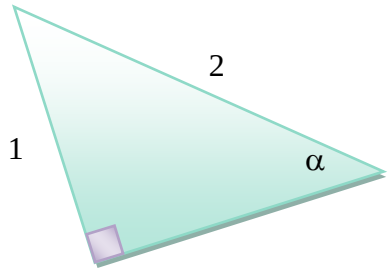
Good luck!

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 α. 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 α 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 $\sin p = 0.7883$ where p is acute, then the value of $\cos(90° - p)$ is _____.

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

a) θ is in Quadrant I

b) θ is in Quadrant IV

6) (6 points) Two planes leave an airport going in different directions. The first plane travels at 510 miles per hour at a bearing of $N43.3°E$. The second plane travels at 670 miles per hour at a bearing of $S46.7°E$. 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 θ in Quadrant III where $\tan\theta = \frac{5}{12}$, find the 5 other trig functions:

$\sin\theta =$ $\quad\quad$ $\csc\theta =$

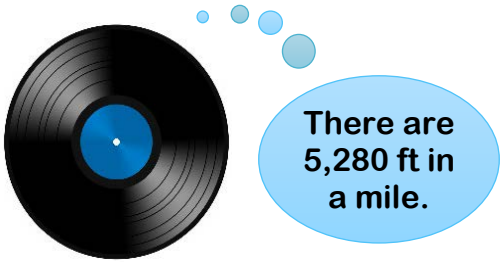
$\cos\theta =$ $\quad\quad$ $\sec\theta =$

$\tan\theta =$ $\quad\quad$ $\cot\theta =$

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

a) $7°35'20''$ to Degrees $\quad\quad$ b) $\frac{7\pi}{6}$ to Degrees $\quad\quad$ c) $18°$ 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 only the final answer 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
Sine		
Cosine		
Tangent		

	Type of Function	Period
Cosecant		
Secant		
Cotangent		

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

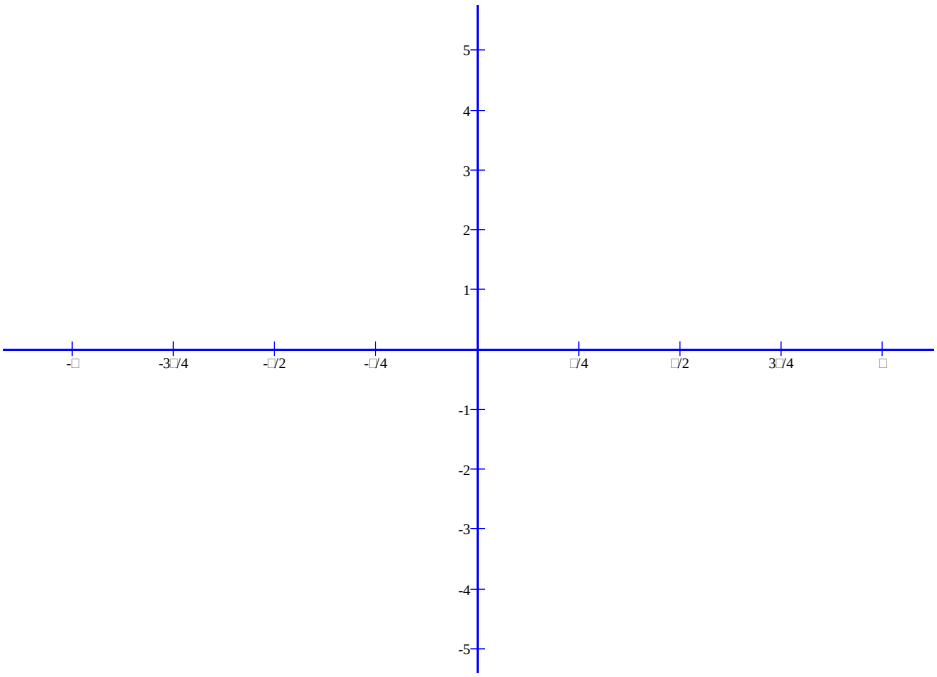
12) (3 points each) Given the point $\left(\dfrac{\pi}{4}, \dfrac{\sqrt{2}}{2}\right)$ on the graph of $y = f(\theta)$, find the **exact value** of the coordinates of the point under the transformation below:

a) $y = -3f(\theta)$ b) $y = f\left(\theta + \dfrac{\pi}{4}\right)$ c) $y = f(2\theta)$ d) $y = f(\theta) + 6$

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

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