

Math 1160A — Exam 1

Name: _____

Monday, June 20, 2014

Time: 60 minutes

Instructor: Brittany Cuchta

Instructions:

- Do not open the exam until I say you may.
- All cell phones and other electronic noisemaking devices must be turned off or completely silenced (i.e., not on vibrate) for the duration of the exam.
- **No calculators** are allowed on the exam.
- The exam *must* be taken in pencil. Using a pen on the exam will result in the loss of points.
- Failure to follow directions specific to a problem will result in the loss of points.
- Circle or box your final answer where appropriate. Put your final answer in the provided space when available. Failure to do so will result in points being deducted.
- Show **all** work. Full credit will only be given if work is shown which **fully and clearly** justifies your answer. I reserve the right to not grade a problem which I cannot read.
- Answers must be exact (like $\sqrt{2}$), not approximate (like 1.414), unless a problem specifically indicates otherwise.
- All final answers must be simplified unless otherwise specified. **Rationalization is not required unless otherwise specified.**
- If you run out of room, use the back of the page and indicate this on the question.
- As always, you are expected to exhibit academic integrity during the exam.

Page:	1	2	3	4	Total
Points:	40	17	16	27	100
Score:					

1. (16 points) Complete the following table.

θ in radians	θ in degrees	$\sin \theta$	$\cos \theta$	$\tan \theta$
$\frac{\pi}{3}$				
		-1		
	315°			
			$-\frac{\sqrt{3}}{2}$	

2. (10 points) Find the requested trigonometric function values, given the following information:

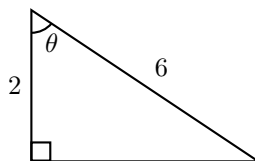
$$\sec \theta = 4 \quad \text{and} \quad \tan \theta < 0$$

$$\csc \theta = \underline{\hspace{2cm}}$$

$$\cos \theta = \underline{\hspace{2cm}}$$

$$\tan \theta = \underline{\hspace{2cm}}$$

3. (14 points) Find the values for the six major trigonometric functions for the following triangle.



$\sin \theta$	$\cos \theta$	$\tan \theta$	$\csc \theta$	$\sec \theta$	$\cot \theta$

4. Give *exact* values for the following expressions.

(a) (6 points) $\cos^2\left(\frac{7\pi}{6}\right) + \sin^2\left(\frac{7\pi}{6}\right) + \sin^3\left(\frac{7\pi}{6}\right)$

Solution: _____

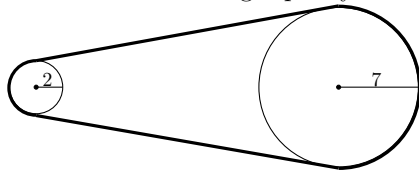
(b) (8 points) $\tan(35^\circ) \sec(55^\circ) \cos(35^\circ)$

Solution: _____

(c) (3 points) $4 \cos\left(\frac{\pi}{4}\right) - 2 \sin\left(\frac{\pi}{4}\right)$

Solution: _____

5. (8 points) Two pulleys, one with radius 2 inches and one with radius 7 inches, are connected via a belt (see diagram below). The smaller pulley rotates at a speed of 3 rev/min. Find the speed of revolution of the larger pulley.



The speed of revolution of the larger pulley is _____.

6. (8 points) You order a large pizza for a party. It is cut into ten equal-area slices of area $\frac{32\pi}{5}$ in². What is the *diameter* of a large pizza?

The diameter of a large pizza is _____.

7. Graph the following function. Be sure to label at least three points and show at least **two full periods**.

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

(a) (2 points) What is the amplitude of the function? _____

(b) (4 points) What is the period of the function? _____

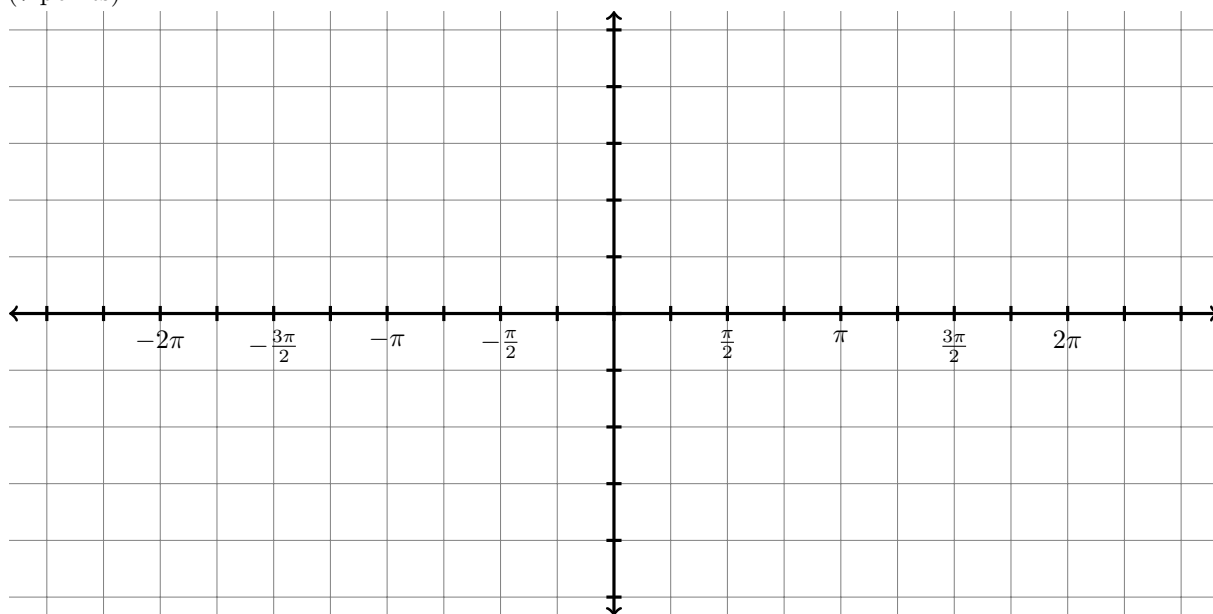
(c) (3 points) What is the phase shift of the function? _____

The direction? to the left to the right

(d) (3 points) What is the vertical shift of the function? _____

(e) (4 points) Is the function even or odd? _____

(f) (7 points)



8. (4 points) The equation above is not the only equation that can be used to express this graph. Give another equation using the sine function that represents the same graph.