Trigonometry Exam 1: Review/Summary

General Information about the exam

- This exam consists of 6 problems (19 parts) and is worth 80 points.
- You will NOT use a calculator on this exam.
- Please do not be surprised or upset if, at the start of the exam, I arrange the seating of the class to minimize distractions.
- Please do not be surprised at the apparent length of the exam when you get it. I like to leave lots of empty space for you to do scratch work. The exam is about 9 pages long, but really only a couple pages of that is questions. The rest is blank space.
- Some problems on this exam are labeled "**Answer alone is sufficient**." That means you are free to write the answer without showing any work. However, incorrect answers without work usually earn zero partial credit. Of course, correct answers with bad work can result in a deduction.
- Unless labeled as in the previous item, you should show your work on all problems. If I think work should have been shown, correct answers without work will usually not earn full credit.
- An excellent way to prepare for this exam (besides going over the assigned homework, the quizzes, and the problems we did together in class) is to try the Review Exercises at the end of the chapter (pages 165-167) and the Chapter Test (page 168). You should be able to do any of those problems (except for those calling for a graphing calculator).

FMI (For MY information): If you have a circumstance that makes it necessary for you to have exam adjustments (such as a need to take your exam in the CAS), please do two things for me.
1) Make sure the CAS Director contacts me with the necessary info. I am not able to make accommodations without the proper paperwork on file in the CAS office.
2) Email me ASAP with a specific request of what you would like to do. I'll then be able to consider if that is necessary or appropriate, in consultation with the CAS Director.

Reminder regarding missed exams:
You are not entitled to a makeup exam. However, if you are considering missing an exam, there are a few things that are expected of you, and some things you should expect. Please see the syllabus for a refresher on this.

Topics

You should:

- be able to take one of our standard distances around the unit circle and know the terminal point associated with it.

- know the main definitions (particularly the trig functions).

- be able to find the values of the trig functions using a unit circle.

- be able to sketch the graphs of the trig functions.

- know how to find the amplitude, period, and phase shift of a trig function, and know what these things are, and be able to sketch the graph.

- be able to look at a sine or cosine wave, read off the amplitude, period and phase shift, and then construct the function.

- be able to model a simple harmonic motion situation (i.e. be able to make up a sine or cosine function that fits a given oscillatory problem)
  Note: Any formulas needed for pendulums or springs will be provided on the exam.

- be able to use the main identities of the trig functions (reciprocal, ratio, Pythagorean, even/odd).

Trigonometry Exam 1 Name: _____
Spring 2019 80 points

Please write your name above, as well as on the back of this exam.

This exam consists of 6 problems (22 parts) and is worth 82 points, but will be graded out of 80 points. Show your work in the space provided. Partial credit will be given on most problems, but only for proper work which is shown.

You may not use a calculator on this exam.

1. (3 points each) Suppose we start at the point (1,0) and travel around the unit circle a distance of t units. For each value t listed below, identify the terminal point on the unit circle. (Answers alone are sufficient this time, but any work you show might help you get partial credit if your answer is wrong.)

a) $t = 3\pi/4$
b) $t = -\pi/6$
c) $t = 11\pi$
d) $t = 5\pi/3$

2. (2 points each) Suppose we travel t units around the unit circle, and we end at the point (0.6, 0.8). Find the following:
(Answers alone are sufficient this time, and you may leave your answers in unsimplified form.)

a) sin(t)
b) tan(t)
c) sec(t)
d) csc(t)
e) cot(t)
f) cos(t)

3. (3 points each) Evaluate the following trig values. Answers alone are sufficient, but wrong answers with no work are worth zero points.

a) $\sin(\pi/4)$
b) $\cos(3\pi/4)$
c) $\tan(2\pi/3)$
d) $\cot(-3\pi)$
e) $\sec(\pi/3)$
f) $\csc(\pi/2)$

4. (6 points each) Sketch graphs of the following functions. Mark your scale. Answers alone are sufficient.

a) $y = \tan x$
b) $y = \cot x$
c) $y = \sec x$
d) $y = \csc x$

6. (6 points) Sketch the graph (at least one complete cycle) of this function:

$$f(x) = 4 \sin(2x - \pi/3).$$

Make sure you mark your scale on the graph (both x and y).

5. (10 points) A giant ferris wheel (shown to the right) has a radius of 20 meters, and the bottom of the wheel passes 3 meters above the ground. If the ferris wheel makes one complete revolution every 30 seconds. Find the values of A, B & D to make the following function describe the height above the ground of a person riding on the ferris wheel:

$$f(t) = A \sin(Bt) + D$$

(Hint: Think about what features of the function are regulated by each of A, B & D.)