MAT 1420 Week 1 Written Assignment
Covers Section 1.1

Be sure to follow College Algebra formatting guidelines in your work. They're the same for us as they are for College Algebra, except we're "1420" and not "1340," so "1420" in the top left corner, not "1340."

Resources:

- Homework Videos on harryzaims.com: https://harryzaims.com/public_html /
- Use Classlist on the Course Shell to ask me questions in e-mail.
- Attend my Office Hours in ZOOM at 10 a.m. This is always open at 10 a.m. It's for my College Algebra people, but if nobody's around, we can do something. Otherwise, just call me and we'll use our own classroom at the ZOOM link you already are using to attend class. But I'll be in the Office Hours ZOOM, Monday through Thursday, at 10 a.m.
- Call me at 970-290-0550 and I'll open up my office and we can meet any time, if you're in a hurry, and you missed the regular office hours. I enjoy a great deal of schedule flexibility, so this on-demand feature is something I can offer without much difficulty.

I have added some thoughts at the end of the assignment. It turned into a crappy essay, but I'm leaving it in. I would be pleased if you enjoyed or learned anything from "Grunt" and "Hand-In" discussion, but I think it may just be a case of my over-sharing my thought process.

"Write much. Think little." That's always been *my* mantra. It carried me over quite a few rough patches in my learning, where things didn't come to me as easily as they seemed to come to other people. Usually, I was fairly quick, but when I wasn't, I had to grind. I had to write a lot extra.

1. Imagine you are a particle on a circle, spinning counterclockwise. What is the ratio of the change in the central angle θ (preferably in radians) to the elapsed time *t*, i.e., what is $\frac{\Delta\theta}{\Delta t}$?

2. What is the arc length *s* corresponding to a radius *r* and a central angle θ?

3. What is the area *A* of a sector of a circle with radius *r* and entral angle θ, where θ is measured in radians?

4. Determine two angles θ_1 and θ_2 (One positive and one negative) that are coterminal with $\theta = \frac{2\pi}{3}$?

5. Find (if possible) the complement and the supplement of the following angles:
   a. $\theta = \frac{\pi}{3}$
   b. $\theta = \frac{3\pi}{4}$

6. Sketch each angle and state the quadrant of its terminal side:

   a. $\theta = \frac{\pi}{3}$

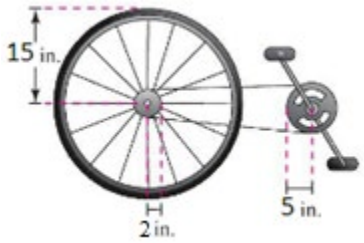
   b. $\theta = \frac{3\pi}{4}$

   c. $\theta = -\frac{\pi}{4}$

   d. $\theta = \frac{9\pi}{7}$

7. A 3-inch-diameter pulley on an electric motor that runs at 1000 revolutions per minute is connected by a belt to a 6-inch-diameter pulley on a saw arbor.
   a. Find the angular speed (in radians per minute) of each pulley.
   b. Find the revolutions per minute of the saw.

8. The radii of the pedal sprocket, the wheel sprocket, and the wheel of the bicycle in the figure are 5 inches, 2 inches and 15 inches, respectively. A cyclist is pedaling at a rate of 1.4 revolutions per second.
   a. (5 pts) Find the speed of the bicycle in feet per second.
   b. (5 pts) Convert your answer, above, to miles per hour. Round final answers to 1 decimal place.



Grunt Pages and Hand-In Pages: A Soliloquy (Optional Read)

Back in the day, I had 2 manila folders for all my math classes. The first, and by far the thickest, was "Grunt." The second, which I kept a lot nicer, was "Hand-In." The "Grunt" was all the writing I did, to figure out the answer. "Hand-In," as the name suggests, was the version I turned in to be graded. On that version, I wrote out the question as correctly and briefly as I could, and I wrote out the steps and showed all the support, including all the scratch I used, all in one place, and as organized for someone else to read as possible.

Because I wrote so darn much on everything, and learned to explain things to someone at or slightly below my level, I basically made the perfect study guide for myself, preparing for tests. I'd flip through both folders and make sure I knew how to do everything, and could make up (or for this class, just click on "Practice Another" in any of your old WebAssign assignments) any version of it and confidently solve it, which meant that I also knew how to check my answer.

The tools are different, these days. You can check a lot of your work using technology, if you know how to use a website like Wolfram Alpha or Desmos Graphing Calculator, or you have a TI 83/84, which is kind of a standard graphing calculator. (By the way, if you do have a TI 83/84, there's a chapter in the back of the eBook that covers TI 83/84 techniques).

What I'm looking for, as an instructor, is a brief, yet complete narrative of the steps taken to solve the problem or answer the question.

You may use a pen tablet of some sort or a smartphone app, like CamScanner, to create high-quality PDFs of your written work.

Submit work as a single PDF file, of as many pages as it takes to do a good job. Don't try to save space or save paper. Learn this well, and you will go on to plant more trees than all the paper you could possibly cover with your hand-written notes.

If you use paper and pencil or pen, old-school, I would recommend a ream of cheap copier paper, 2 manila folders, a 3-ring punch, and a stapler. I stapled each section of homework together in my folders, back in the day.

If you're using a pen tablet, I think that's great. The analogue to what I used to do with manila folders can easily be replicated electronically on your device. The way I would do it would be to just save all my scribbles to Grunt in one document, and then save the latest version of Grunt to a version that lived in Hand-In. I think it's helpful to be able to see your failed attempts or rough drafts, all at a glance, when you're studying your nice, "Hand-In" version before Midterm and Final.