
ORIGINAL PROBLEMS, EXPECTATIONS

Your next task is to write a problem (or maybe two)! That's right – you're making up your *own* problem. There is no “right” way to create a problem – just try something! Experiment, draw, doodle, meditate, dance, scream, juggle, defenestrate, whatever. Discuss it with a friend.

It may be the case that you've never had this kind of assignment before – and that's OK. It's time to learn something new.

If you're stuck, here are a few suggestions:

- Maybe there are some things in calculus last semester you really didn't understand. Make up some problems on those topics – like writing your own exam. Except don't just take the exam questions and change the numbers – use them as a place to start creating something new.
- Are there some homework problems which you really liked? Write your own mini-Problem Set! Again, pay attention to the *types* of problems for ideas. Again, we're not just changing numbers here.
- Think about the mathematics in your daily life. I had a student once say he got his idea because he dropped his backpack down the stairs and had to go back down and get it. And there was his displacement *vs.* rate Original Problem for calculus! Inspiration can come from anywhere.

So here's what you need to include when you write an Original Problem:

1. **MOTIVATION:** How did you come up with the problem? Was it based on a problem in the book? An exam? Were you doodling? Did it come to you in a dream? In the shower? Just a sentence or two will suffice here. But, importantly: acknowledge your source! It's OK to look at other problems, just cite them if you use them.
2. **PROBLEM STATEMENT:** Fairly self-explanatory. But a caution: give it to someone else to proofread! One of the most common traps to fall into is to write a problem which can be interpreted in more than one way. Is your problem stated absolutely clearly, so that someone else can understand it perfectly without needing to ask you any questions about interpretation?
3. **PROBLEM SOLUTION:** Again, self-explanatory. But your solution should be in paragraph form, using complete sentences! And if you only have a partial solution, you should explain where you are stuck and those questions whose answers could enable you to make further progress.

4. REFLECTION: Only a few sentences are necessary here. What did you learn? What did you observe about yourself as a problem writer? At the end of the semester, you will need to write an essay about your growth as a mathematician and problem-writer, so making notes along the way would be a good idea.

Remarks:

- Your work must be done on a word processor. Extra credit for using L^AT_EX.
- Your problem must be submitted to turnitin.com. This must be completed by midnight on the day the problem is due.
- Start early! (Really.) This can be a fun assignment – but not if you wait until the last minute. It's better to have some time to mull things over.
- Don't hesitate to discuss ideas with me.
- Feel free to go a little crazy! Completing all components of the assignment with correct mathematics at an appropriate level guarantees you at least a B. Being creative will earn you an A. And of course there's the coveted A+. But that usually happens only once or twice during an entire semester....