Problem of the Week
Number One
January 23, 2017

At the start of every semester, I show up in this space to introduce the new round of POTW. Typically I make a few jokes, write with an absurdly exaggerated level of enthusiasm, and try to persuade you that, POTW having returned, your life is now complete.

And let's be honest: there are some semesters where that level of showmanship is needed. I may put on a brave face and act like everything is sunshine and roses, but there are times, as I grind out these problems every week, when I understand why my students give me strange looks when I tell them math is fun.

Then there are other semesters. The one on which we are about to embark, for example. These are the semesters where the muse speaks, puppies frolic, and happiness reigns. The semesters where POTWs of perfect, transcendent amazingness appear unbidden from the ether. POTWs which, when placed in your hands, produce such feelings of contentment and joy that you never want to let go. If you are a Harry Potter fan, you should be picturing a reverse Dementor.

Nor should you think the previous paragraph is just another example of the cheap showmanship I decried in the paragraph before that. Certainly not. It is just that, in a semester such as this, bland, lifeless prose becomes an impossibility commensurate with spontaneous decreases in entropy or simultaneous knowledge of position and momentum.

This semester, POTW is *that* good.

And why shouldn't it be? Our theme for the term is:

Algebra

Is that not everyone's favorite subject? If it is not, then it is possible I have seriously miscalculated.

As always, we start the proceedings with a fairly easy problem. But they'll get harder as we go along, so don't get cocky!

Expressed in terms of x, what is $x\%$ of $x\%$ of $x\%$ of 1,000,000?

When you think you have the problem figured out, follow the instructions below.

Submissions are due to Jason Rosenhouse by 5:00 on ***Friday, January 27.*** *Solutions, complete with a brief explanation, should be written on the back of an official POTW handout. Place your name, e-mail address, and the section numbers and professors of any math courses you are taking, in the* ***upper right corner*** *of the front of the page. One weekly winner will receive a five-dollar gift card from Starbucks. Solutions will be posted at the POTW website:*

http://educ.jmu.edu/∼rosenhjd/POTW/Spring17/homepage.html