Class Prep (prepare for Monday, February 19)

Finish making the units for the Five Intersecting Tetrahedra described on the salmon handout from class Wednesday and start putting it together (as in, have at least one tetrahedron by class Monday if possible). Feel free to team up with another person to work on this if that feels like a good idea. Also note that there's a paper cutter available for public use in the library by the printer, so if you want to just cut your origami paper into thirds with that, go for it!

Also finish the Lill's method handout. Note that if you get to $ax^3+bx^2+cx+d=0$, you're done since that means you've shown that x (which you started with as $-\tan\theta$ and based everything on that) is indeed a root of the cubic equation.

Problems (due Friday, February 23 at the beginning of class)

1. The setup on the Lill's Method handout assumes that a, b, c, and d are all positive real numbers, but cubics do not necessarily have only positive coefficients. For each of the cases below, draw the corresponding diagram (similar to what's on the handout) and show taht Lill's method still produces a solution to the cubic equation. Note that in some cases you'll need to extend the line the turtle's path is on for your laser to reflect off the line. Also note: the quadrant you're in affects the sign of horizontal lengths (those in the x-direction) and vertical lengths (those in the y-direction). If your coefficient path ends up in quadrant II, for example, your horizontal lengths will all be negative as x is negative in that quadrant and your vertical lengths will all be positive as y is positive in that quadrant. Do **ONE** of the following two options; you may do the other option as well for a bonus if you'd like.
   (a) At least one, but not all, of a, b, c, and d is negative (you can choose which one(s)).
   (b) At least one, but not all, of b, c, and d is zero (in this case, the turtle turns but does not move forward or backward).

Bonus options, if you're interested: figure out a way to use origami to trisect an angle and/or double a cube based on Lill's method instead of what we already did.