Macaulay2 Summer School 2014
Tutorial on Numerical Algebraic Geometry
Homework #2

(This homework set is pretty short since we didn't get through all of the problems on the first set AND you can now try your runs with other software packages.)

1. Try running some problems (perhaps from Monday's homework) through the various `NumericalAlgebraicGeometry` methods and interfaces in Macaulay2.
2. Use Bertini to compute the numerical irreducible decomposition of one of the zero-dimensional problems from yesterday, perhaps just the system from #1 ($x^2 - 1 = y^2 + 1 = 0$). Notice that you still get all the isolated solutions; it just takes longer....
3. Recall from #2(f) of Monday's homework that there is a 2-bar linkage with infinitely many solutions.
   (a) Compute a numerical irreducible decomposition for that example.
   (b) Use membership in Bertini (TrackType: 3) to see whether the isolated, singular solutions from Monday do actually sit on the algebraic set from the previous part.
4. Go check out the cool real algebraic surfaces at `http://www1-c703.uibk.ac.at/mathematik/project/bildergalerie/gallery.html`
5. Keep working on the homework from Monday.