Weekly Reports 6 and 7

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# What I did

* Implemented Trevisan’s MAX-CUT approximation algorithm
* Tested Trevisan’s MAX-CUT. It works *really* well (see test\_results.txt).
* Cleaned up the code by modularizing frequently used expressions and putting them in a separate file

# Questions

* When doing two\_thresholds\_spectral\_cut:
  + Sometimes a few elements of the eigenvector corresponding to the smallest eigenvalue of the normalized adjacency matrix could have the same absolute value, but they don’t show up exactly (for example, I had an eigenvector that was [0.5, -0.5, 0.5, -0.5] to be exact but Julia gave me something like [0.500000001, -0.4999999999, 0.50000000002, -0.49999999999997]), this messes up the ’s, which messes up the function output. What is the best way to handle this? Do I use somewhere in there?
  + When calculating , sometimes the denominator could be 0, causing the fraction to be NaN. Julia still returns an answer, though, so should I ignore this?
* I don’t think my SDP implementation is quite right because the test numbers don’t look right, but I don’t know what I’m doing wrong. Please help!

# What I will do next week

* Fixing/improving my SDP implementation?
* Converting my work so far to weighted graphs? Not sure. I would like suggestions!