## Computation, Problem Set #4, Differentiation, Integration, and Optimization

OSM Lab, Justin Gardiner

Due Thursday, July 20 at 8:00am

Do the following Exercises from the Brigham Young University Applied Mathematics and Computational Emphasis (ACME) Python labs Humpherys and Jarvis (2017) and from Richard Evans' notes.

1. **Exercises from ACME: PageRank lab.** Do problems 1 through 5 (NOT problem 6) from PageRank lab. You will need to download the matrix.txt and ncaa2013.csv files, which are saved in the course repository.

2. **Exercises from ACME: Conditioning and Stability lab.** Do problems 1 through 6 from Conditioning and Stability lab. You will need to download the stability_data.npy file, which is saved in the course repository.

3. **Exercises from ACME: Numerical Differentiation lab.** Do problems 1 through 8 from Numerical Differentiation lab. You will need to download the plane.npy file, which is saved in the course repository.

4. **Exercises from Evans: Numerical Integration lab.** Do exercises 14.1 through 14.9 from Numerical Integration lab.

# References

**Humpherys, Jeffrey and Tyler Jarvis**, "Computational Labs for Foundations of Applied Mathematics, Volumes I and II," 2017.