Project Presentations:

Here is our estimated schedule for the next couple of weeks:

M 3/16 and F 3/20: Finish Ch. 21 Power Series

M 3/16, W 3/18: Ch 27 Metric Spaces. Take home portion of exam to be given out on Wed/Thru/Friday? Due following Monday?

F 3/20: Ch 28 Analysis on Metric Spaces

M 3/23: Ch 29: Compactness in Metric Spaces

W 3/25: Ch 30: Ascoli Theorem

F 3/27: Ch 22: Introduction to Fourier Series: Laura

M 3/30: Banach Fixed Point Theorem (Caitlin, Tessa, Taku) and Intro to Nowhere Differentiable Functions (Lise, Qandeel, Jenny). 20 minutes each group.

W 4/1: Intro to Space Filling Curves (Audra, Sandra, Rebecca) and Intro to Newton's Method (Grace, Alicia, Emilie). 20 minutes each group.


After this, we will cover topics in dynamical systems as a class. In late April, all groups will give another, more in-depth presentation on their projects.

Due Wed March 18th.


II. Write up, in more detail than in the book, the proof of the root test in the case that \( \rho < 1 \). p. 91 Ch. 20.

Ch. 21: # 1, 2, 3, 7

III. a. In class, we discussed the power series for \( \frac{1}{x} \) given by equation (2), p. 96. Check that the terms in this power series agree with the terms we would have gotten from the Taylor Series based at \( x_0 = 1 \). i.e. \( a_k = f^{(k)}(1)/k! \) (This is problem #6).

b. By integrating (2), find a power series for \( \ln x \). What is the radius of convergence of this power series? Justify. What happens to the series at the endpoints of the interval of convergence?

c. By differentiating (2), find a power series for \( \frac{1}{x^2} \). What is the radius of convergence of this series? Justify. What happens at the endpoints?