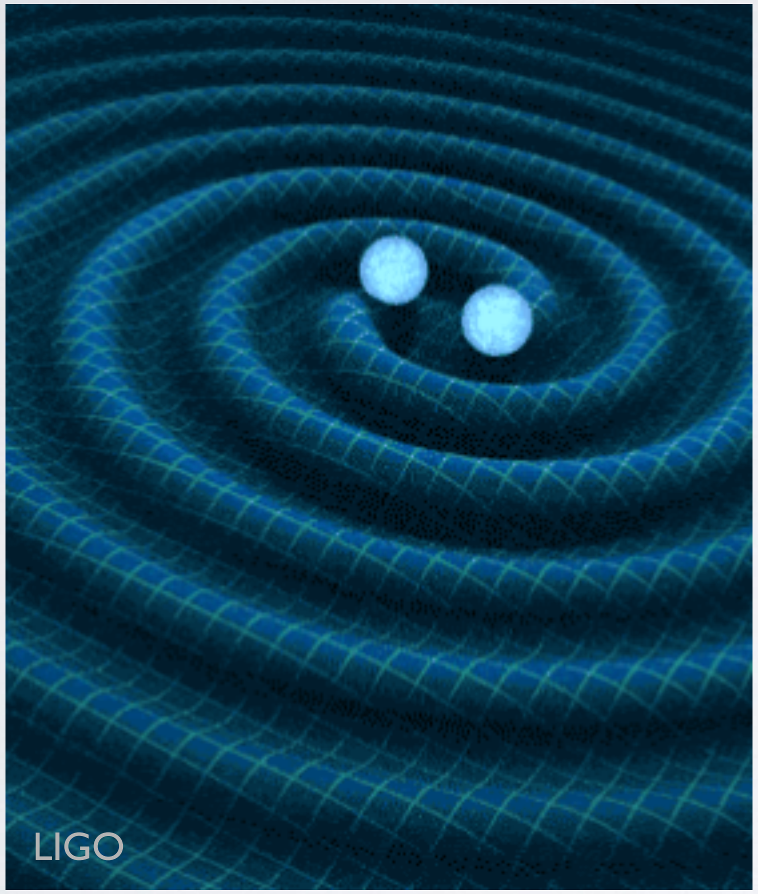
Week 3 - #2

Oscillations (III)



Today: Ch 3.8-3.9

Next Class: Ch 4.1-4.3

Ji-hoon Kim (Seoul National University)

Classical Mechanics I (Spring 2026): Quiz #5

— [open book and open note, but no cellphone or laptop, drop it off as you leave the class] —

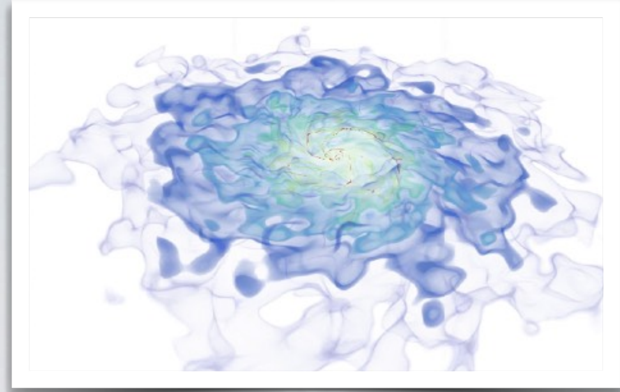
Please write down your name and student ID in the top right corner. (0.0 pt: no paper found with your name / 0.5 pt: paper found with your name and some answers / 1.0 pt: good answers)

1. Thornton & Marion, Problem 3-11.

2. Thornton & Marion, Problem 3-28.

La Planète Affolée (1942)

Young Man Intrigued by the Flight of
a Non-Euclidean Fly (1942, 1947)



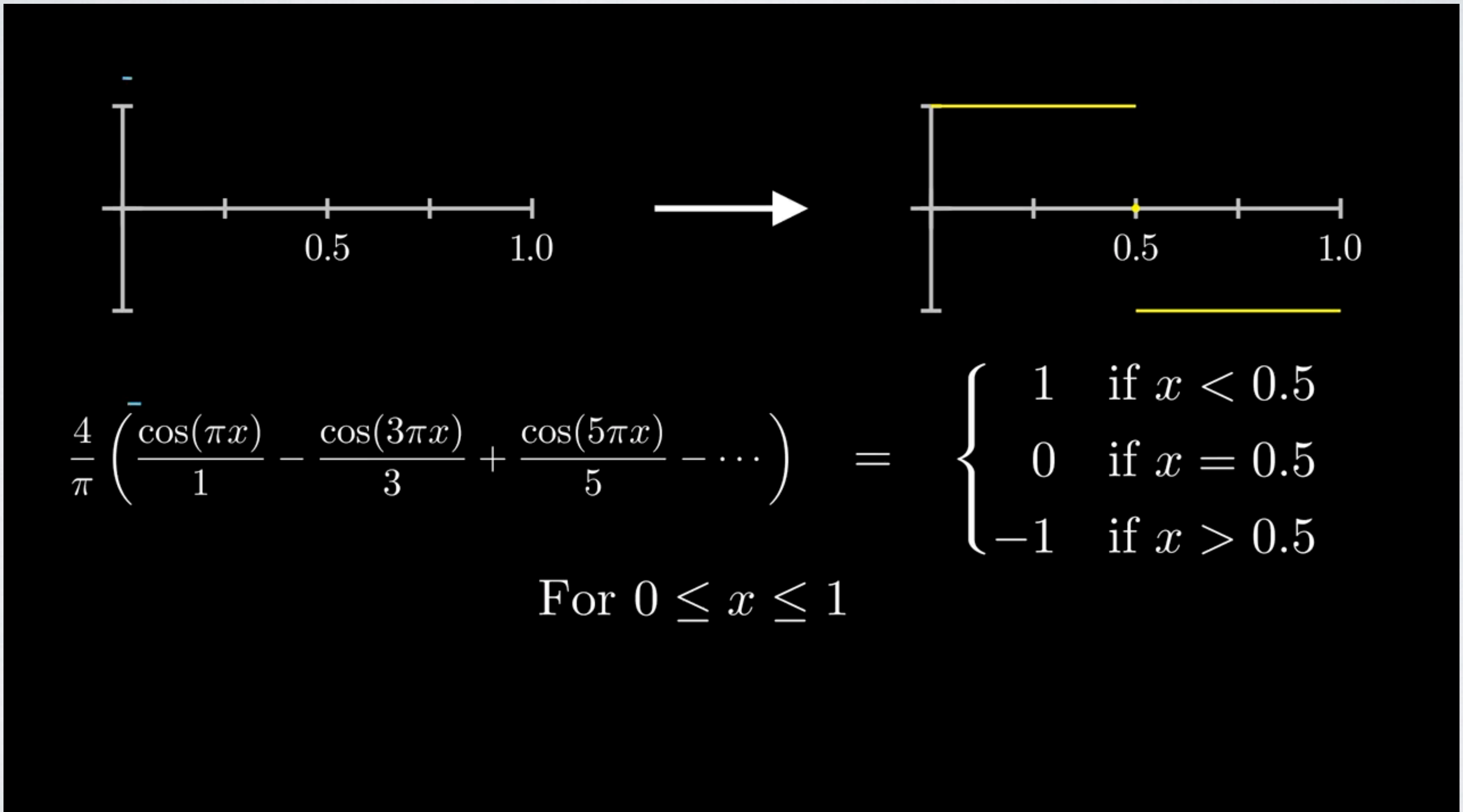
Sine-Cosine Fourier Series

Fourier Sine Series

www.falstad.com/fourier/index.html

Fourier Cosine Series

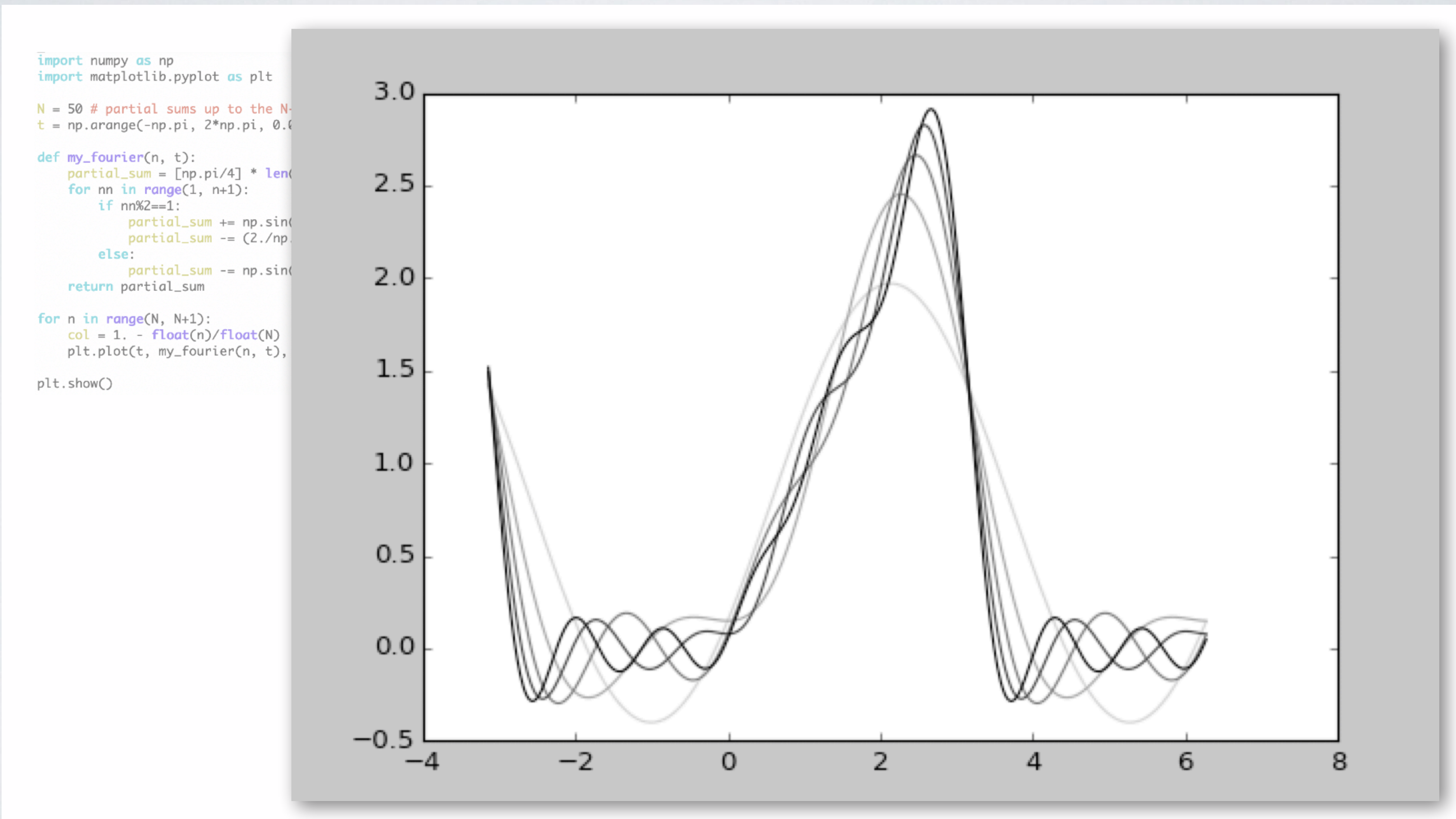
- A visualization of Fourier cosine series.



youtube.com/watch?v=r6sGWTCMz2k

Sine-Cosine Fourier Series

- A visualization of sine-cosine Fourier series (Ch 7.5, Prob 5.7).



Sine-Cosine Fourier Series

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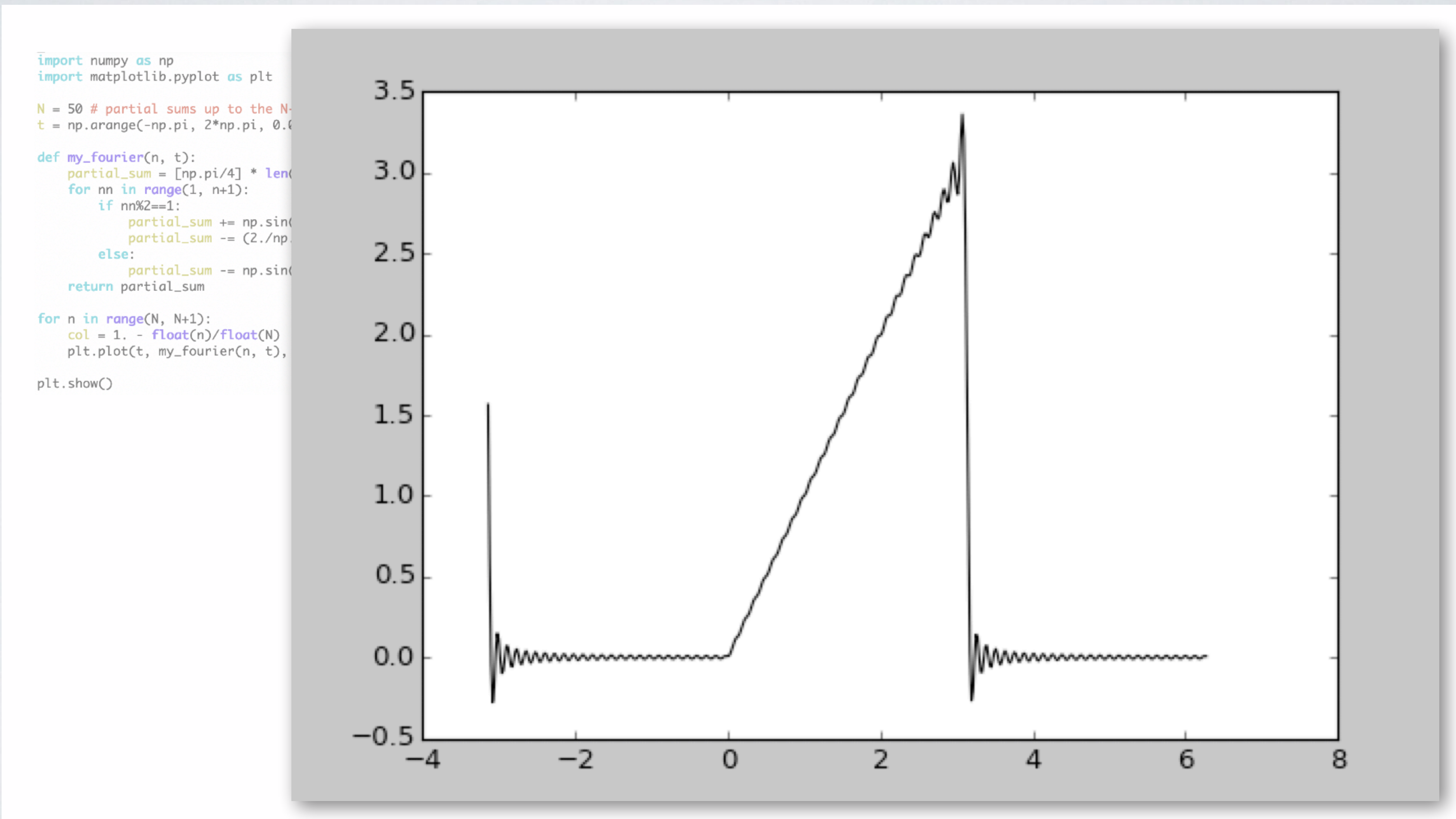

Sine-Cosine Fourier Series

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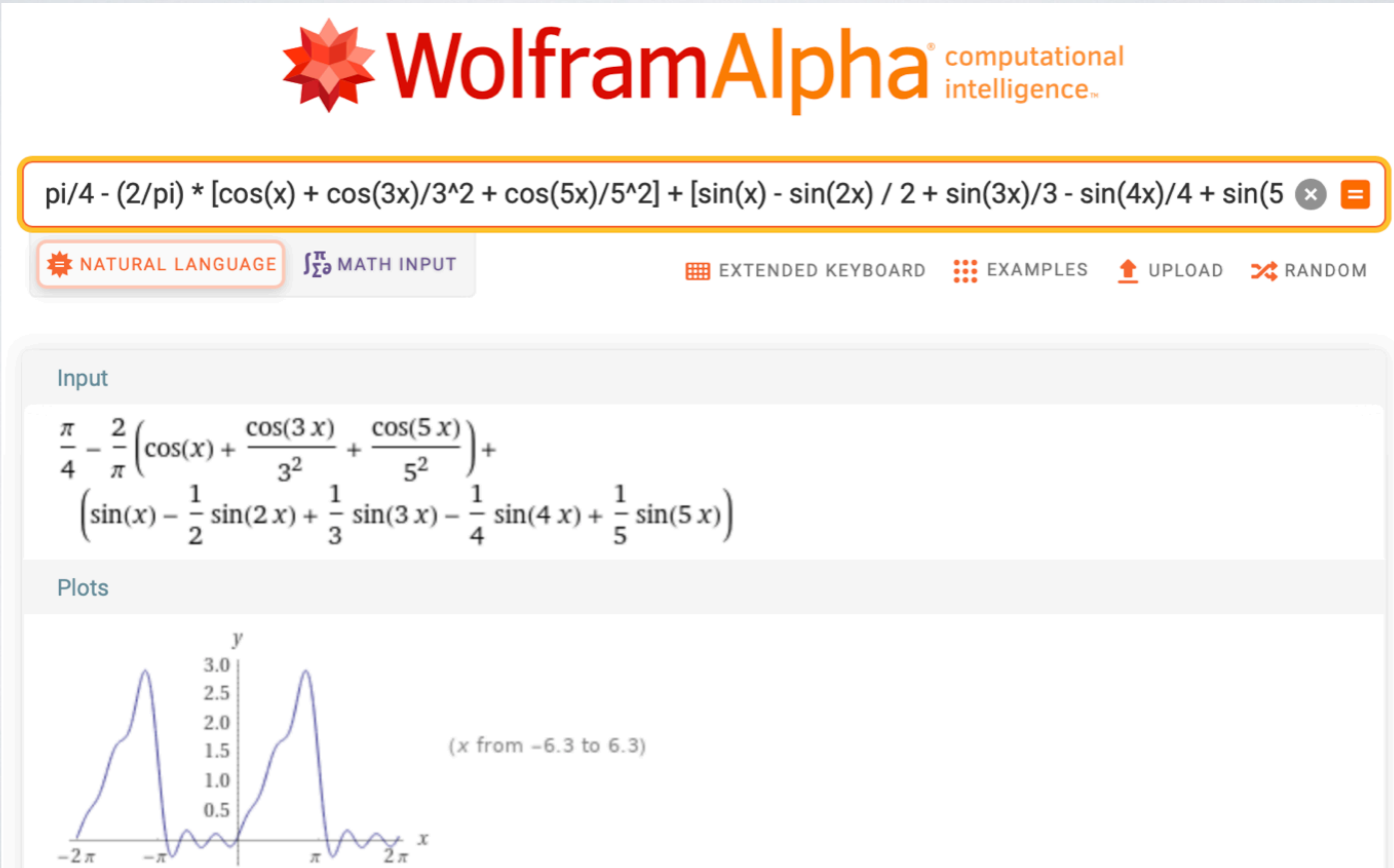
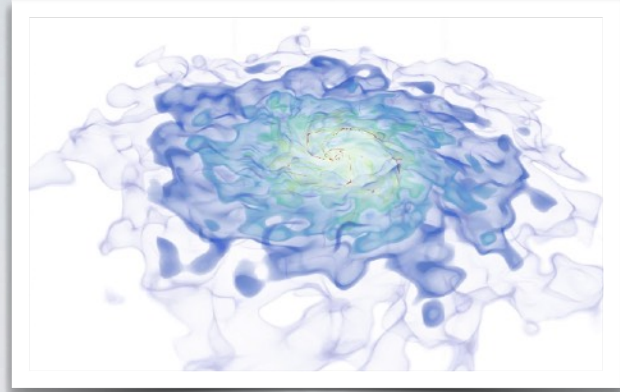
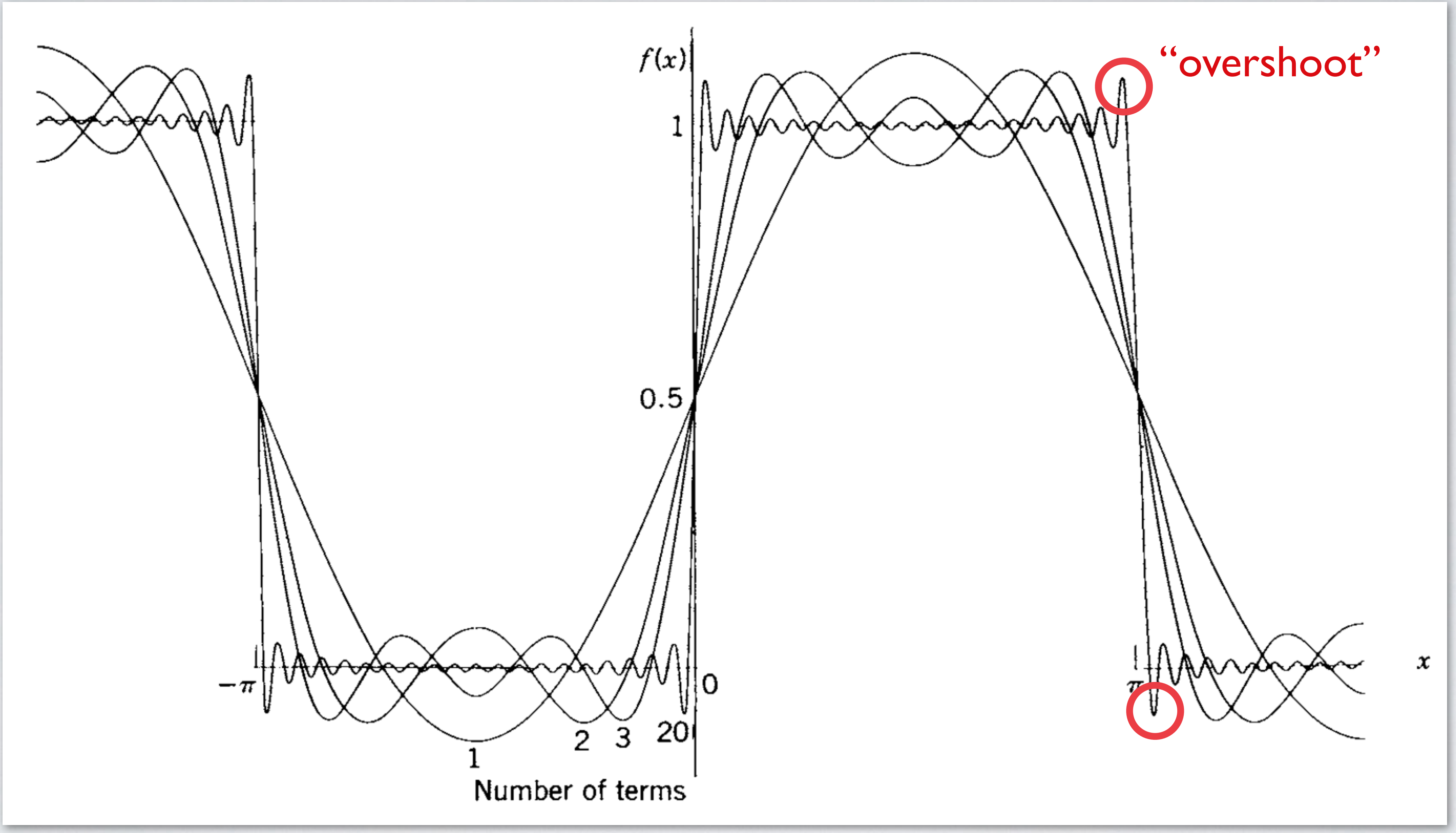




Gibbs Phenomenon

Fourier Sine Series

- A visualization of Fourier sine series (Ch 7.6, Figure 6.2).



Sine-Cosine Fourier Series

- A visualization of sine-cosine Fourier series (Ch 7.5, Prob 5.7).

```
import numpy as np
import matplotlib.pyplot as plt

N = 50 # partial sums up to the N-
t = np.arange(-np.pi, 2*np.pi, 0.0

def my_fourier(n, t):
    partial_sum = [np.pi/4] * len(
    for nn in range(1, n+1):
        if nn%2==1:
            partial_sum += np.sin(
            partial_sum -= (2./np.
        else:
            partial_sum -= np.sin(
    return partial_sum

for n in range(N, N+1):
    col = 1. - float(n)/float(N)
    plt.plot(t, my_fourier(n, t),

plt.show()
```