

Homework #5: Phys 3344: Prof. Olness Fall 2018

Due 25 September, 2018

Hint: Use the sample mathematica file posted on the web page:

1,2,3,4) Using Mathematica, follow my example for the 4 functions given and:

- Plot the sample function:
- Compute the Fourier coefficients
- Plot the series with different numbers of terms
- Make a "frequency domain" plot of the coefficients
- Re-write the Exp series as a Trig series
- Verify that they are identical

5,6,7) By hand, compute the Sin coefficients for

5) $f(x)=x$

6) $f(x)=0$ for $x=[0,\pi/2]$ and $f(x)=1$ for $x=[\pi/2,\pi]$

7) $f(x) = \text{Exp}[-x^2]$

on the interval $x=[0,2\pi]$.