

# Homework #4: Phys 3320: Prof. Olness Fall 2010

*Due October 26, 2010*

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

<http://www.physics.smu.edu/~olness/www/10fall11320/3320/>

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1,2,3) Using Mathematica, follow my example for the 3 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

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4,5) By hand, compute the Sin coefficients for

4)  $f(x)=x$

5)  $f(x)=0$  for  $x=[0,1/2]$  and  $f(x)=1$  for  $x=[1/2,1]$

on the interval  $x=[0,1]$ .