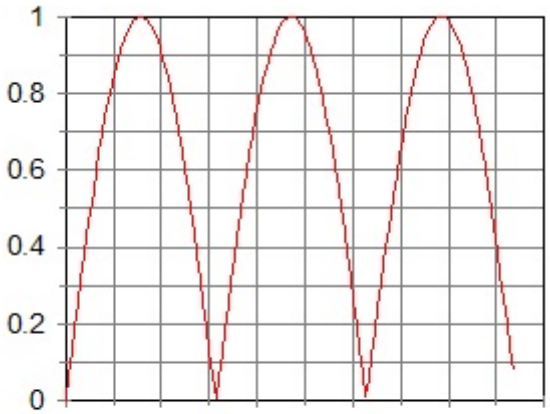
PHYS 320 Analytical Mechanics
Fall 2018

Homework Assignment # 17

- ☞ Read Taylor Sections 6.1 - 6.4, 7.1
- ✪ Taylor Problems: 5.49 - use Maple to plot and attach to your HW.
- ✪ Extra Questions:

I. Find an expression for the Fourier series for a "full wave rectifier," as illustrated in the plot below; use the sine function to piece-wise define the function *f(t)*. Use *Maple* to plot the first five terms of the series, the first 50 terms, and then the first 100 terms. Print out this Maple output and attach to your HW. Feel free to resize the plots so they don't take up so much real estate on the page!



II. Convince yourself that $cos(-n\,\pi) = (-1)^n$, for integer values of n (show me that you are convinced!). Then find similar expressions for $sin(n\,\pi)$, $sin(n\,\pi/2)$, and $cos(n\,\pi/2)$.

III. Find the Fourier series for a square waveform that oscillates between $+F_o$ and $-F_o$ with a period *T*. Define the waveform as an odd function! Use *Maple* to plot the first five terms of the series, the first 50 terms, and then the first 100 terms. Print out this Maple output and attach to your HW.