PHYS 160 - Assignment #1

Due: Friday January. 8th

Make sure your name is listed as a comment at the beginning of your worksheet.

Basic Plotting:

Make sure that each plot has a title that properly identifies it. Plot all functions over the domain $x = [-2, 2]$

- Plot: $f1(x) = e^{-0.3x^2} \sin(x)$

- Plot: $f2(x) = \cos(x) \sin(x)$

- Plot: $f3(x) = \sin(x) + \cos(x)$

- Plot: $f4(x) = \sin(x) + \sin(2x)$

- On the same plot, graph $f1, f2, f3, f4$ simultaneously.

- Find by inspection the intercept of $f1(x)$ with the x-axis over the interval $x = [2, 4]$.

3D Plots

Make sure that each plot has a title that properly identifies it. Plot all functions over the domain $x = [-2, 2]$ and $y = [-2, 2]$ in a boxed plot.

- Define the function $r1(x, y) = \sqrt{x^2 + y^2}$

- Define the function $r2(x, y) = \sqrt{x^2 + y^2} + \sin(x) \cos(2y)$

- Define the function $g(m) = e^{-m^2}$

- Plot $g(r1(x, y))$

- Plot $g(r2(x, y))$

Problem Solving

- Which of these is greater: $a = (\frac{3}{4})^{42}$ or $b = (\frac{7}{8})^{91}$? Make sure your answer is well justified.