

Chem 442: Homework for lecture L16

(only turn in **BOLD** assignment first lecture next week of classes; do all assignments)

1. Turn in

a) If Y_{1-1} and Y_{11} are eigenfunction of \hat{H}_{rot} , prove that $Y_{1-1} - Y_{11}$ is also an eigenfunction of \hat{H}_{rot} . **Hint:** if each function in a sum has the same eigenvalue of energy, what is the energy of the sum?

b) Plot $Y_{1-1} - Y_{11}$ in the x-y plane ($\theta = \pi/2$, plot as function of φ). **Hint:** It is *real*.

2. Do problem 5.2 in the book.