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 $Y_{1-1}$ 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 $\varphi$). **Hint:** It is real.

2. Do problem 5.2 in the book.