

HOMEWORK ASSIGNMENT # 7
DUE: FRIDAY 13 MARCH

1. For the simple linear symmetric triatomic molecule studied in class, show that the normal coordinates given lead to diagonal kinetic and potential energy expressions.
2. Consider a four-atom linear molecule with equal masses m (e.g. C_4) in one dimension. Set up the secular determinant for the vibrational frequencies and show that $\lambda=0$ (translation) is a solution.
3. Determine the representations of the normal modes for ethylene, C_2H_4 . Then determine which of these have IR-active fundamentals and via which dipole component.