

Due Thu Jan 29 at the lecture.

**Problem 1.**

Prove that  $\hat{L}_i$  commutes with the Hamiltonian  $\frac{\hat{p}^2}{2m} + V(\hat{r})$  for spherically symmetric potentials.

**Problem 2.**

Suppose the potential depends only on  $x = r_1$  so that  $V = V(x)$ . Find commutators  $[\hat{L}_i, V(\hat{x})]$ .

Note: here “hat” denotes the operator rather than unit vector in the corresponding direction.