

Chem. 540

Instructor: Nancy Makri

### PROBLEM FORMALISM 6

Use the Taylor expansion of an exponential to show that if  $[\hat{A}, \hat{B}] = 0$ , then  $e^{\hat{A} + \hat{B}} = e^{\hat{A}} e^{\hat{B}}$ . By comparing the expanded forms, convince yourselves that the above equality does not apply if the two operators do not commute.