QM3

Uncertainty, Degeneracy and Commuting Operators; Harmonic Oscillator

a) Derive the Uncertainty Relationship between the two (non-commuting) operators x and p_x.

b) Discuss the relationship between the commutation of operators, compatibility of measurements and operators having sets of simultaneous eigenfunctions. Can you prove anything useful when the spectrum of one of the operators is degenerate?

c) Blundell sheet 3, sheet 3, Q's 3.1 − 3.8, 3.10