

Chem. 540
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SOLUTION OF PROBLEM 11

$$\langle \Psi_1 | \hat{A} \Psi_2 \rangle = \int dx \Psi_1^*(x) (\hat{A} \Psi_2(x)) = \int dx \Psi_1^*(x) \hat{A} \Psi_2(x) = \langle \Psi_1 | \hat{A} | \Psi_2 \rangle,$$

$$\langle \hat{A} \Psi_1 | \Psi_2 \rangle = \int dx (\hat{A} \Psi_1)^* \Psi_2(x) = \left[\int dx \Psi_2^*(x) (\hat{A} \Psi_1) \right]^* = \langle \Psi_2 | \hat{A} | \Psi_1 \rangle^* = \langle \Psi_1 | \hat{A}^\dagger | \Psi_2 \rangle$$