Worksheet #10

(Monday, October 23, 2023)

Name

Question (5 pts):

Consider two unitary operators $U_{dx} = I - \dfrac{i}{\hbar} P_x \Delta x$, $U_{dy} = I - \dfrac{i}{\hbar} P_y \Delta y$ that translate the state vector along x and y axes by Δx and Δy, respectively. Do the translations in different directions commute (in other words, find the commutator $[U_{dx}, U_{dy}]$ and draw your conclusion)?