1. Set up iterated integrals for both orders of integration and decide which order would be easier: \[ \int\int_D y^2 e^{xy} \, dA \] where \( D \) is the region bounded by \( y = x, \ y = 4, \ \text{and} \ x = 0. \)

2. Set up iterated integrals for both orders of integration and decide which order would be easier: \[ \int\int_D xy^2 \, dA \] where \( D \) is the right half of the disk \( x^2 + y^2 \leq 1. \)

3. Evaluate the iterated integral \[ \int_0^1 \int_x^1 \sin(y^2) \, dy \, dx. \]