**Question 1**  Consider the iterated integral

\[
\int_{y=0}^{\sqrt{\pi/2}} \int_{x=y}^{\sqrt{\pi/2}} \sin(x^2) \, dx \, dy.
\]

Which best describes how it might be evaluated?

A. The iterated integral can easily be integrated by evaluating it as written, integrating with respect to \( x \) first and then \( y \).

B. The iterated integral is impossible to integrate analytically because the antiderivative of \( \sin(x^2) \) cannot be expressed in terms of elementary functions.

C. The iterated integral should be expressed as

\[
\int \int_D \sin(x^2) \, dA
\]

for an appropriate region \( D \).

D. The iterated integral should be rewritten as an iterated integral with respect to \( y \) first and then \( x \).

*E. Both C and D: one should determine the region \( D \) in C in order to determine the appropriate limits of integration for the re-ordered iterated integral in D.
Question 2  Consider the triple integral

\[ \int_{z=p}^{q} \int_{y=c}^{d} \int_{x=a}^{b} f(x, y, z) \, dx \, dy \, dz. \]

Which of the following best describes the possibility(s) for the order of integration?

A. There is only one possible order of integration: the one given.

B. There are two possible orders of integration: \( x \) and \( y \) may be switched, as in double integrals.

C. There are three possible orders of integration: one for each variable.

*D. There are six possible orders of integration: one for each permutation of \((x, y, z)\).

E. None of the above: not enough information is given about the region of integration to decide.
Question 3  The speed of an object is constant. The object’s

*A. velocity and acceleration are perpendicular.

*B. acceleration is zero.

*C. velocity is constant.

*D. both B and C.