

Problem statement Grammar Some of these iterated integrals correspond to real geometric problems (computation of volumes) and some do not. Some are actually illegal! Please indicate which are good and which are not. Explain your answers. Compute any iterated integral which corresponds to a volume, and make a rough sketch of each volume computed.

a) $\int_0^{x^3} \int_0^y x^2 + y^2 + 1 \, dx \, dy$

b) $\int_0^1 \int_0^{5x} x^2 + y^2 + 1 \, dx \, dy$

c) $\int_5^7 \int_{y^3}^{3y} x^2 + y^2 + 1 \, dx \, dy$

d) $\int_{-1}^0 \int_{2y}^{-y^2} x^2 + y^2 + 1 \, dx \, dy$