Multiple Integration
Iteration of Double Integrals

Question
Calculate the given double integral by iteration.
$\iint_R x^2 y^2 \, dA$
With R being the same rectangle of part (a).
Answer

$$\begin{aligned} \iint_R x^2 y^2 \, dA &= \int_0^a x^2 \, dx \int_0^b y^2 \, dy \\ &= \frac{a^3}{3}\frac{b^3}{3} = \frac{a^3 b^3}{9} \end{aligned}$$