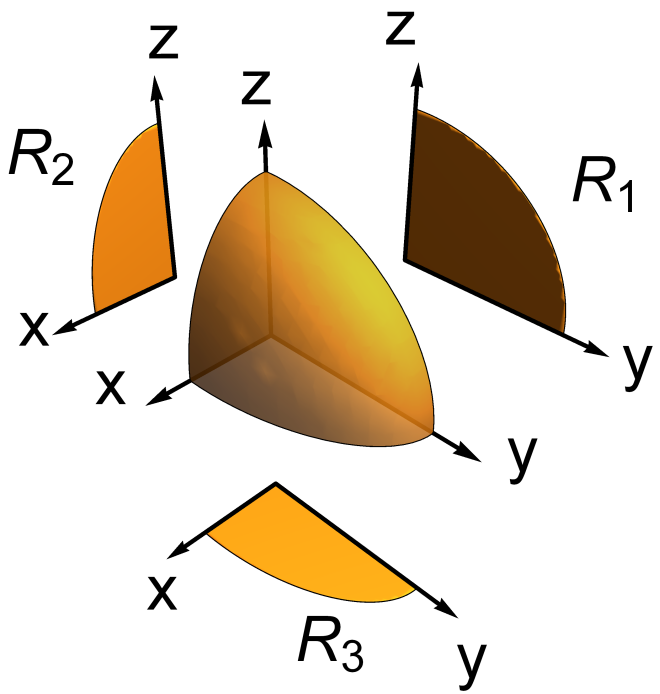
Double Integrals over General Regions



Question

The integral $\iint_{\mathcal{R}_2} \sqrt{4 - 4x^2 - \frac{4}{3}z^2}\, dA$ computes the volume of the solid shown in the figure along with its shadows in the coordinate planes. Which of the following integrals also computes the volume?

A. $\iint_{\mathcal{R}_3} \sqrt{12 - 12x^2 - 3y^2}\, dA$

B. $\iint_{\mathcal{R}_3} \sqrt{4 - 4x^2 - \frac{4}{3}z^2}\, dA$

C. $\iint_{\mathcal{R}_1} \sqrt{1 - \frac{y^2}{4} - \frac{z^2}{3}}\, dA$

D. $\iint_{\mathcal{R}_1} \sqrt{12 - 3x^2 - 4z^2}\, dA$