

$$M = \int_E \rho dV.$$

We can do the integrations over the three coordinates in any order we choose. Here we have chosen to do the the z integral first (that is, put it on the inside), then y , then x .

$$\begin{aligned} M &= \int_0^1 \left[\int_0^1 \left[\int_0^2 (1 + 2y) dz \right] dy \right] dx \\ &= \int_0^1 \int_0^1 [(1 + 2y)z]_{z=0}^2 dy dx \\ &= \int_0^1 \int_0^1 2(1 + 2y) dy dx \\ &= 2 \int_0^1 [y + y^2]_0^1 dx \\ &= 2 \int_0^1 (1 + 1) dx \\ &= 4 \int_0^1 dx \\ &= 4 \text{ kg.} \end{aligned}$$