Calculus 3 - Triple Integrals

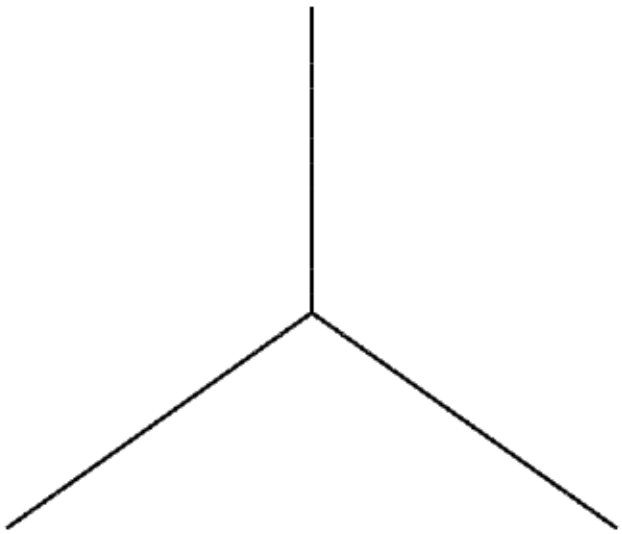
We introduced triple integrals where we integrate surface to surface, then curve to curve, then point to point

$$\int_{P_1}^{P_2} \int_{C_1}^{C_2} \int_{S_1}^{S_2} f(x,y,z)dV \tag{1}$$

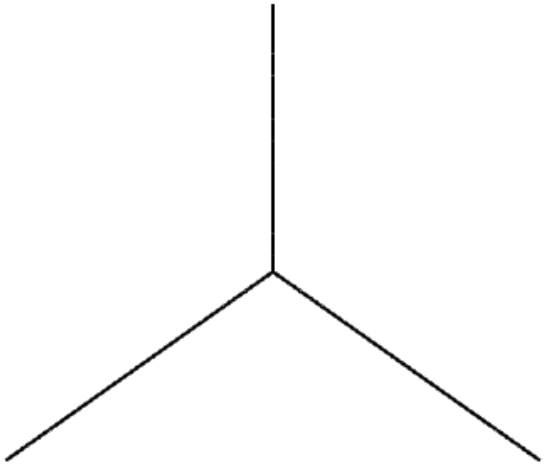
and dV is

$$\begin{aligned} dV &= dzdxdy = dzdydx \\ &= dydxdz = dydzdx \\ &= dxdydz = dxdzdy \end{aligned} \tag{2}$$

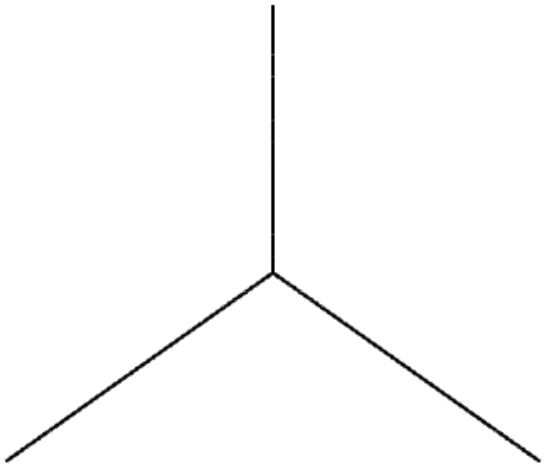
Top View



Front View

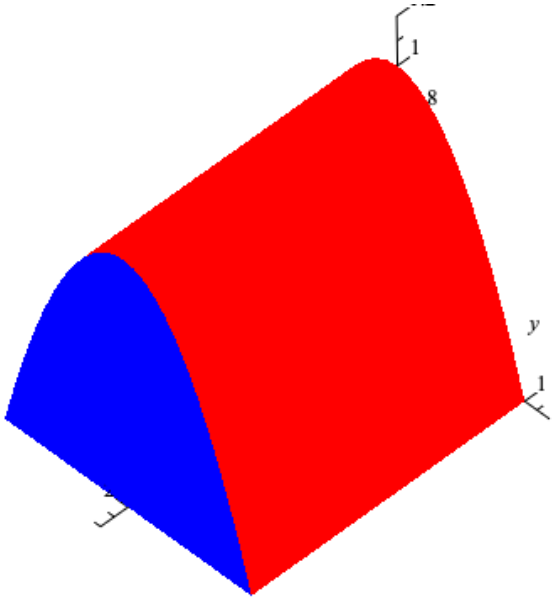


Side View

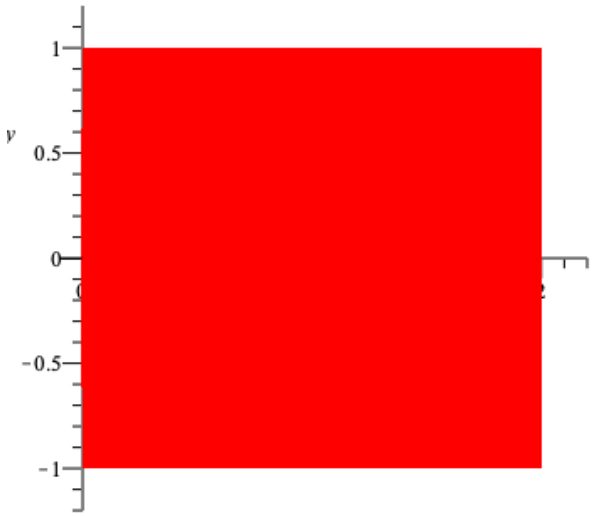


Example 1 Set up the triple integral for the volume bound by

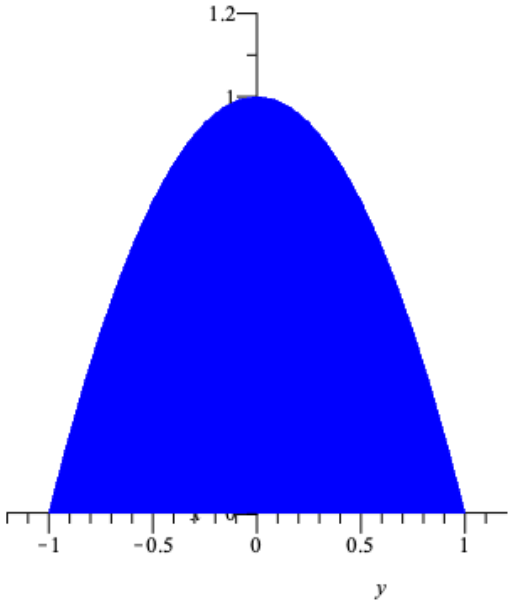
$$z = 0, z = 1 - y^2, x = 0, x = 2 \tag{3}$$



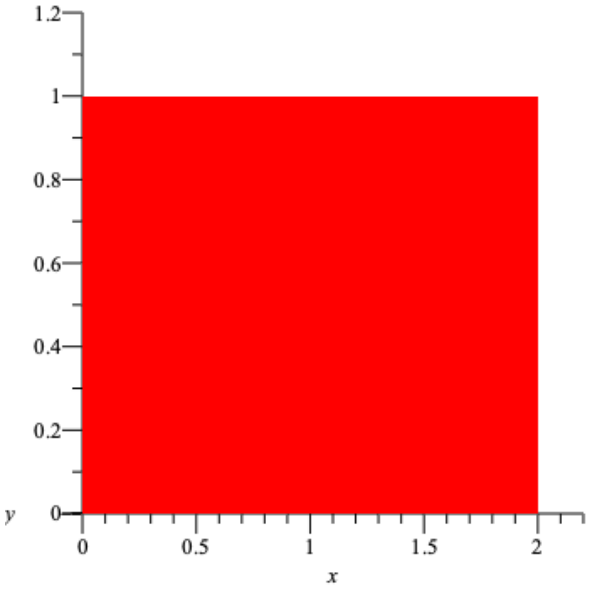
Top View



Front View

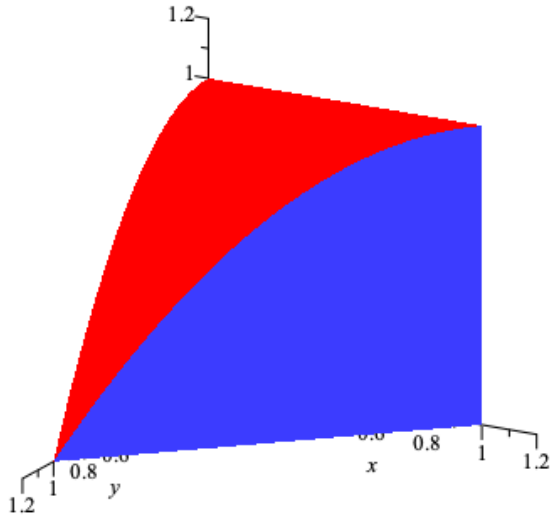


Side View

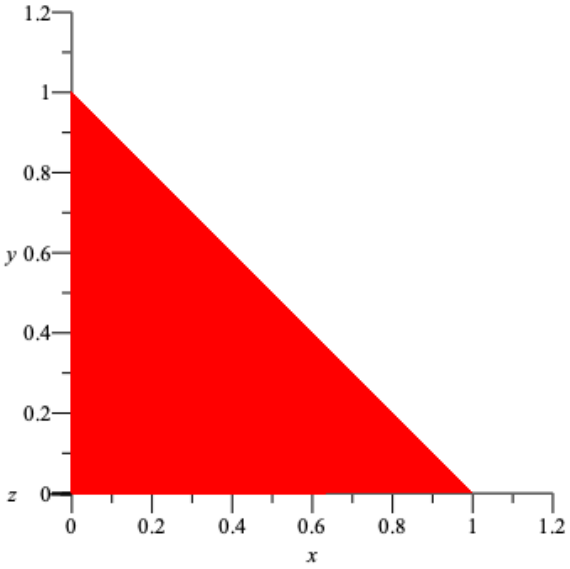


Example 2 Set up the triple integral for the volume bound by

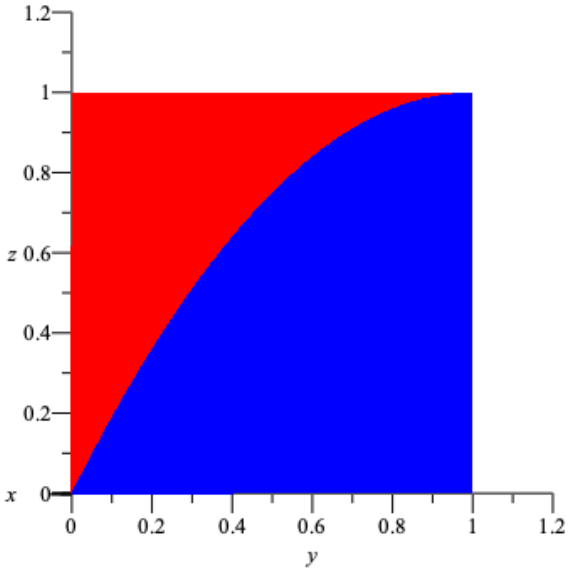
$$z = 0, z = 1 - x^2, y = 1 - x, x = 0. \tag{4}$$



Top View



Front View



Side View