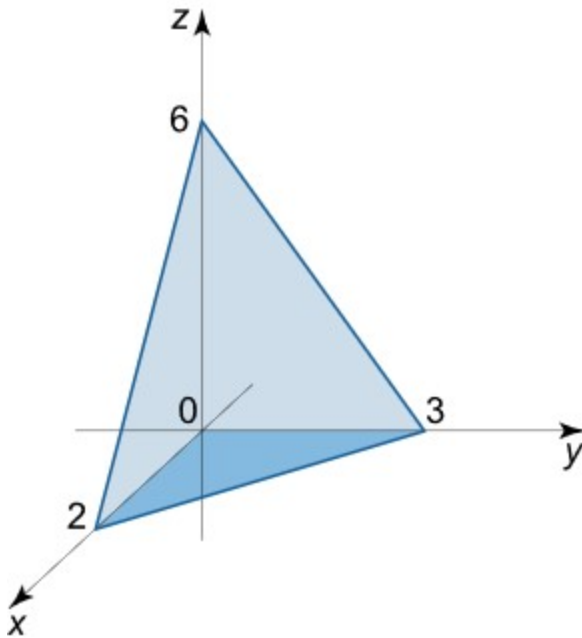# Chapter - 1

Practice problems

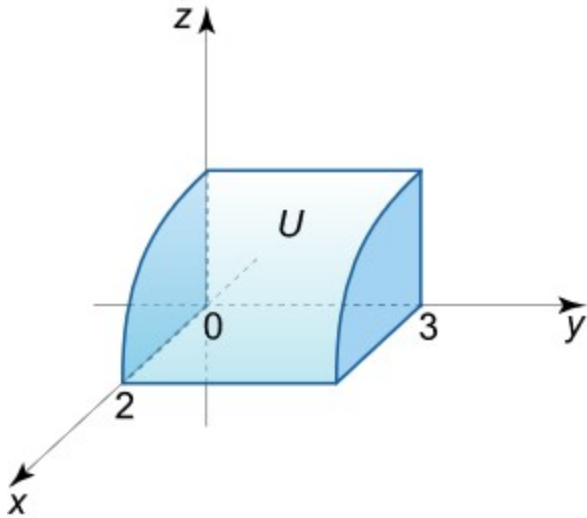(1)   Evaluate the integral $\int_0^2 \int_0^z \int_0^y xyz\,dx\,dy\,dz$

Ans: 4/3

(2)   Evaluate the integral $\iiint (1-x)\,dx\,dy\,dz$ in first octant below the plane $3x + 2y + z = 6$
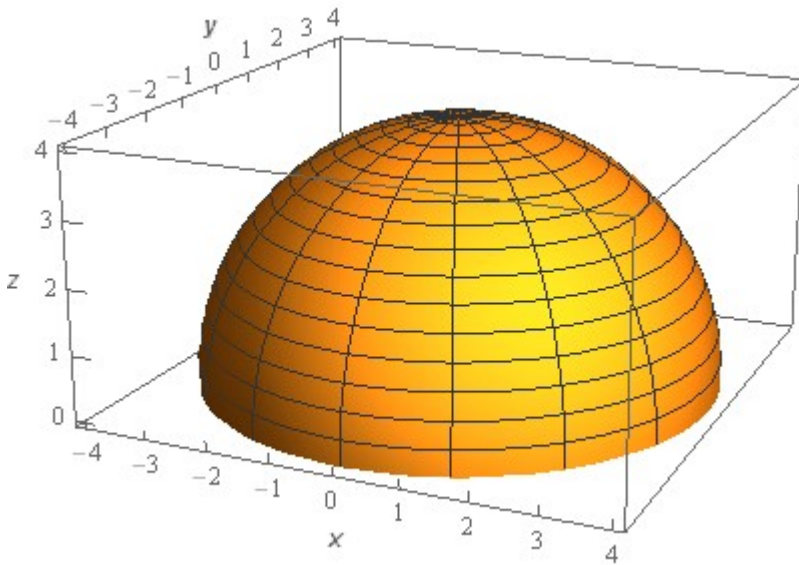

Ans: 3

(3)   Evaluate the volume of a cylinder represented by $x^2 + z^2 = 4$ in the first octant bounded by the plane $y = 3$. Do this in Cartesian and cylindrical co-ordinate system.
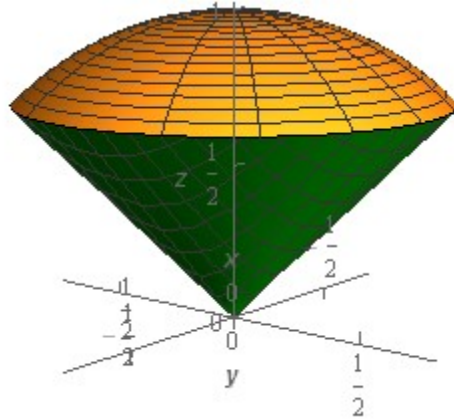
Ans: 3π

(4)   Evaluate $\iiint (10xz + 3)dV$ where the region is defined by the equation $x^2 + y^2 + z^2 = 16$ with ≥ 0 .
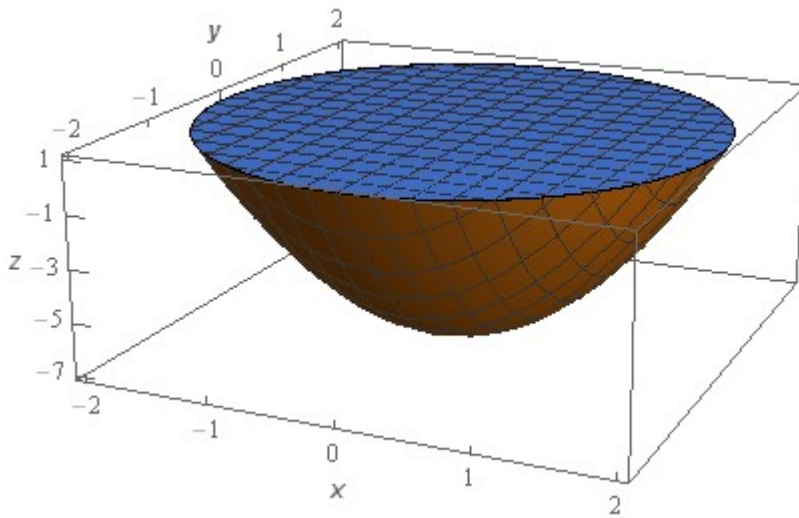

Ans: 128π

(5)   *Evaluate volume of an ice-cream cone defined by the volume enclosed by the surfaces*
$$x^2 + y^2 + z^2 = 1 \text{ and } z = \sqrt{x^2 + y^2}.$$

Ans: $\dfrac{2\pi}{3} \times 0.292$

(6)   *Evaluate $\iiint 4xy\,dV$ inside a volume bounded by* $z = 2x^2 + 2y^2 - 7 \text{ and } Z = 1.$

Ans: 0