Lesson 53. Triple Integrals in Cylindrical Coordinates, cont.

Example 1. Find the volume of the solid that is enclosed by the cone $z = \sqrt{x^2 + y^2}$ and the sphere $x^2+y^2+z^2 = 2$.

Problem 1. Using cylindrical coordinates, evaluate $\iiint_E z\,dV$, where E is enclosed by the paraboloid $z = x^2 + y^2$ and the plane $z = 4$ in the first octant.

Problem 2. Using cylindrical coordinates, find the volume of the solid above the paraboloid $z = x^2 + y^2$ and below the half-cone $z = \sqrt{x^2 + y^2}$.