

Section 16.6: Additional Problems

1. Let S be the part of the circular cylinder $x^2 + z^2 = 9$ in the first octant such that $1 \leq y \leq 12$.
 - (a) Parameterize S using a polar aspect. Give the intervals for the variables as well as the cross product for the surface.
 - (b) Parameterize S using a cartesian method. Give the intervals for the variables as well as the cross product for the surface.
2. Let S be the part of the paraboloid $y = 18 - x^2 - z^2$ that is to the right of the plane $y = 2$. Parameterize S using a cartesian method. Give the intervals for the variables as well as the cross product for the surface.

3. Parameterize the surface of the cone $z = \sqrt{x^2 + y^2}$ using spherical.
4. Identify the surface with the given vector equation.

$$\mathbf{r}(u, v) = \langle u + v, 4 - v, 3 + 4u + 6v \rangle$$

5. Let S be the part of the paraboloid $x = 4 + y^2 + z^2$ that is inside the cylinder $y^2 + z^2 = 16$. Find the surface area of S .
6. Find the area of the surface that is parameterized by $r(a, b) = \langle ab, a + b, a - b \rangle$ with $a^2 + b^2 \leq 1$