

19-26 Find the parametric representation for the surface.

19. The plane through the origin that contains the vectors $\mathbf{i} - \mathbf{j}$ and $\mathbf{j} - \mathbf{k}$.

21. The part of the hyperboloid $4x^2 - 4y^2 - z^2 = 4$ that lies in front of the yz -plane

25. The part of the sphere $x^2 + y^2 + z^2 = 36$ that lies between the planes $z = 0$ and $z = 3\sqrt{3}$

33-36 Find an equation of the tangent plane to the given parametric surface at the specified point.

33. $x = u + v$, $y = 3u^2$, $z = u - v$; $(2, 3, 0)$

35. $\mathbf{r}(u, v) = \langle u \cos(v), u \sin(v), v \rangle$; $u = 1$, $v = \pi/3$

39-50 Find the area of the surface.

41. The part of the plane $x + 2y + 3z = 1$ that lies inside the cylinder $x^2 + y^2 = 3$

45. The part of the surface $z = xy$ that lies within the cylinder $x^2 + y^2 = 1$

49. The surface with parametric equations $x = u^2$, $y = uv$, $z = \frac{1}{2}v^2$,
 $0 \leq u \leq 1$, $0 \leq v \leq 2$

61. Find the area of the part of the sphere $x^2 + y^2 + z^2 = 4z$ that lies inside the paraboloid $z = x^2 + y^2$.