1. Find a parametric representation for the surface.

   a) The part of the ellipsoid $x^2 + 2y^2 + 3z^2 = 1$ that lies to the left of the xz-plane.

   b) The part of the sphere $x^2 + y^2 + z^2 = 16$ that lies between the planes $z = -2$ and $z = 2$.

2. Find an equation of the tangent plane to the given parametric surface at the specified point.

$$\mathbf{r}(u, v) = u^2\mathbf{i} + 2u\sin v\,\mathbf{j} + u\cos v\,\mathbf{k}, \quad u = 1,\ v = 0$$

3. Find the area of the part of the plane with vector equation

$$\mathbf{r}(u, v) = \langle u + v, 2 - 3u, 1 + u - v\rangle$$

   that is given by $0 \le u \le 2$, $-1 \le v \le 1$.

4. Evaluate the surface integral.

$$\iint_S (x^2 z + y^2 z) dS,$$

where S is the hemisphere $x^2 + y^2 + z^2 = 4$, $z \geq 0$.

5. Evaluate the surface integral of the vector field $\mathbf{F}$.

$$\mathbf{F}(x, y, z) = y\mathbf{j} - z\mathbf{k},$$

S consists of the paraboloid $y = x^2 + z^2$, $0 \leq y \leq 1$, and the disk $x^2 + z^2 \leq 1$, $y = 1$.

6. Use Stokes' Theorem to evaluate $\iint_S \text{curl } \mathbf{F} \cdot d\mathbf{S}$.

$$\mathbf{F}(x, y, z) = xyz\mathbf{i} + xy\mathbf{j} + x^2yz\mathbf{k},$$

where S consists of the top and the four sided (but not the bottom) of the cube with vertices $(\pm1, \pm1, \pm1)$, oriented outward.

Course (the last) Homework due ???

Apr 28, Mon. : **16.7** 19, 21, 23, 27. **16.8** 1, 3, 5
Apr 30, Wed. : **16.8** 7, 9, 11(a), 13, 15, 19, 20
May 2, Fri. : **16.9** 1, 3, 5, 7, 9, 11, 13, 17, 23, 24, 25, 26, 27