Example 1. Compute the surface integral $\int \int_S xz \, dS$, where $S$ is the sphere defined by $x^2+y^2+z^2 = 1$ in the first octant.

Example 2. Evaluate the surface integral $\int \int_S x \, dS$, where $S$ is the surface $z = x^2+y$ for $0 \leq x \leq 1$ and $0 \leq y \leq 2$.

Example 3. Evaluate the surface integral $\int \int_S y \, dS$, where $S$ is the boundary surface of the solid region $E$ enclosed by the cylinder $x^2 + y^2 = 1$, the plane $z = 0$ and the plane $z = 1 + y$.

Example 4. Find surface integral of the vector field $\vec{F} = \langle z, y, x \rangle$ across the sphere $x^2 + y^2 + z^2 = 1$.

Example 5. Find surface integral of the vector field $\vec{F} = \langle x, y, z \rangle$ across the sphere $x^2 + y^2 + z^2 = 4$.

Example 6. Find the surface integral of the vector field $\vec{F} = \langle z, y, x \rangle$ across the paraboloid $z = -1 + x^2 + y^2$ and the plane $z = 0$. 