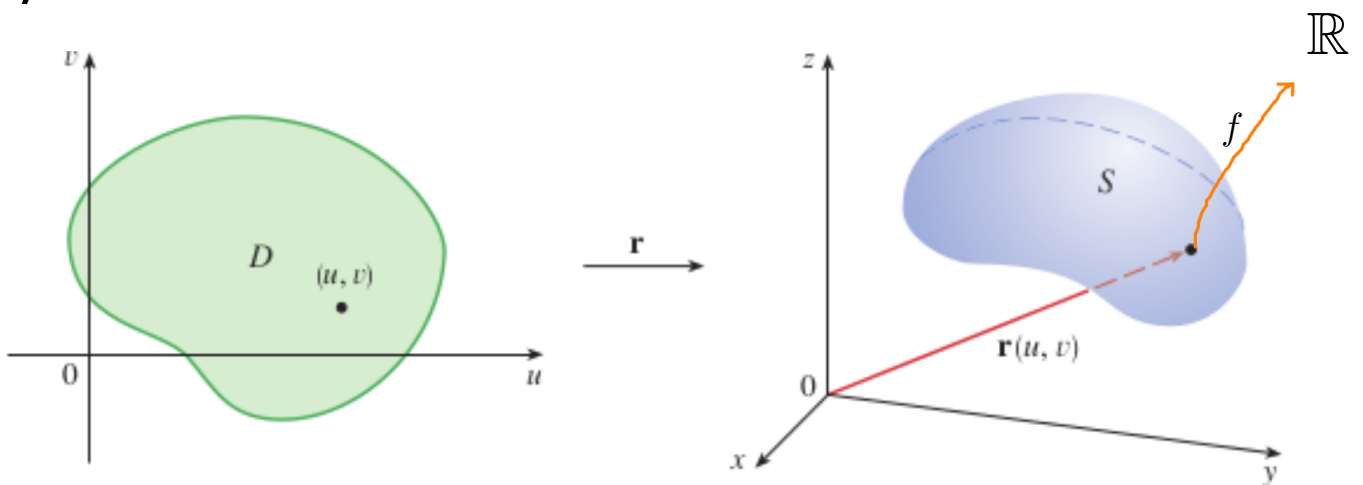


Surface Integrals

The surface integral of f over the surface S .

$$\iint_D f(\vec{r}(u, v)) |\vec{r}_u(u, v) \times \vec{r}_v(u, v)| dA$$



Computed in class

$$\iint_S z dS$$

S is upper hemisphere of radius 2.

$$\iint_S z + 3y - z^2 dS$$

S is the portion of $z = 2 - 3y + x^2$ that lies over the triangle in the xy plane with vertices $(0, 0)$, $(2, 0)$ and $(2, -4)$.

$$\iint_S y + z dS$$

S is the surface whose side is the cylinder $x^2 + y^2 = 3$, whose bottom is $x^2 + y^2 \leq 3$ in the xy plane and whose top is the plane $z = 4 - y$.