### 15.3 Surface Area

- The are of a surface $z=f(x, y)$ is

$$
A(S)=\iint_{D} \sqrt{\left(f_{x}\right)^{2}+\left(f_{y}\right)^{2}+1} d A
$$

where $f$ is differentiable and $(x, y) \in D$.

- Note that a surface $S$ is projected to the domain $D$.

