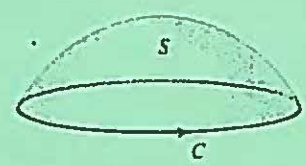
Stokes' Theorem $$\iint_S (\nabla \times \mathbf{F}) \cdot \mathbf{n}\, dS = \oint_C \mathbf{F} \cdot d\mathbf{r}$$



Divergence Theorem $$\iiint_D \nabla \cdot \mathbf{F}\, dV = \iint_S \mathbf{F} \cdot \mathbf{n}\, dS$$

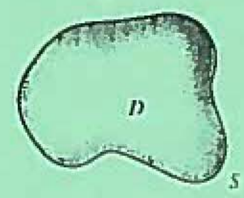


Table 14.2

Surface	Explicit Description $z = g(x, y)$: Equation	Normal $\mathbf{n} = \pm\langle -z_x, -z_y, 1\rangle$	Parametric Description: Equation	Normal $\mathbf{n} = \mathbf{t}_u \times \mathbf{t}_v$
Cylinder	$x^2 + y^2 = a^2$, $0 \le z \le h$	$\mathbf{n} = \langle x, y, 0\rangle$, $\lvert\mathbf{n}\rvert = a$	$\mathbf{r} = \langle a\cos u, a\sin u, v\rangle$, $0 \le u \le 2\pi, 0 \le v \le h$	$\mathbf{n} = \langle a\cos u, a\sin u, 0\rangle$, $\lvert\mathbf{n}\rvert = a$.
Cone	$z^2 = x^2 + y^2$, $0 \le z \le h$	$\mathbf{n} = \langle x/z, y/z, -1\rangle$, $\lvert\mathbf{n}\rvert = \sqrt{2}$	$\mathbf{r} = \langle v\cos u, v\sin u, v\rangle$, $0 \le u \le 2\pi, 0 \le v \le h$	$\mathbf{n} = \langle v\cos u, v\sin u, -v\rangle$, $\lvert\mathbf{n}\rvert = \sqrt{2}v$
Sphere	$x^2 + y^2 + z^2 = a^2$	$\mathbf{n} = \langle x/z, y/z, 1\rangle$, $\lvert\mathbf{n}\rvert = a/z$	$\mathbf{r} = \langle a\sin u\cos v$, $a\sin u\sin v, a\cos u\rangle$, $0 \le u \le \pi, 0 \le v \le 2\pi$	$\mathbf{n} = \langle a^2\sin^2 u\cos v, a^2\sin^2 u\sin v$, $a^2\sin u\cos u\rangle$, $\lvert\mathbf{n}\rvert = a^2\sin u$
Paraboloid	$z = x^2 + y^2$, $0 \le z \le h$	$\mathbf{n} = \langle 2x, 2y, -1\rangle$, $\lvert\mathbf{n}\rvert = \sqrt{1 + 4(x^2 + y^2)}$	$\mathbf{r} = \langle v\cos u, v\sin u, v^2\rangle$, $0 \le u \le 2\pi, 0 \le v \le \sqrt{h}$	$\mathbf{n} = \langle 2v^2\cos u, 2v^2\sin u, -v\rangle$, $\lvert\mathbf{n}\rvert = v\sqrt{1 + 4v^2}$