Formelliste

Annenderiverttesten er basert på

$$f_{xx}f_{yy} - f_{xy}^2$$

Koordinatsystemer

Sylinderkoordinater (r, θ, z)

$$x = r\cos\theta, \quad y = r\sin\theta, \quad z = z$$

$$r^2 = x^2 + y^2, \quad dV = r\,dz\,dr\,d\theta$$

Kulekoordinater (R, ϕ, θ)

$$x = R\sin\phi\cos\theta, \quad y = R\sin\phi\sin\theta, \quad z = R\cos\phi$$

$$R^2 = x^2 + y^2 + z^2, \quad dV = R^2\sin\phi\,dR\,d\phi\,d\theta$$

Variabelskifte

$$dx\,dy = \left|\frac{\partial(x,y)}{\partial(u,v)}\right| du\,dv = \left|\frac{\partial x}{\partial u}\frac{\partial y}{\partial v} - \frac{\partial x}{\partial v}\frac{\partial y}{\partial u}\right| du\,dv \text{ og tilsvarende i tre dimensjoner}$$

Flateintegral

$$dS = \left|\frac{\partial \mathbf{r}}{\partial u} \times \frac{\partial \mathbf{r}}{\partial v}\right| du\,dv \quad \text{eller} \quad dS = \frac{|\nabla G|}{|\partial G/\partial z|}\,dx\,dy$$

Vektoranalyse

Greens teorem: $\quad \oint_{\mathcal{C}} F_1\,dx + F_2\,dy = \iint_{R}\left(\frac{\partial F_2}{\partial x} - \frac{\partial F_1}{\partial y}\right) dA$

Divergensteoremet: $\quad \iint_{\mathcal{S}} \mathbf{F}\cdot\hat{\mathbf{N}}\,dS = \iiint_{T} \operatorname{div}\mathbf{F}\,dV$

Stokes' teorem: $\quad \oint_{\mathcal{C}} \mathbf{F}\cdot d\mathbf{r} = \iint_{\mathcal{S}} (\operatorname{curl}\mathbf{F})\cdot\hat{\mathbf{N}}\,dS$