



FORMELLISTE

Dekomponering av akselerasjonsvektor:

$$\mathbf{a}(t) = v'(t) \mathbf{T}(t) + \kappa(t)v^2(t) \mathbf{N}(t)$$

Diskriminanten i annenderiverttesten:

$$\Delta = AC - B^2 \quad \text{der} \quad A = f_{xx}, \quad B = f_{xy}, \quad C = f_{yy}$$

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 (ρ, φ, θ) :

$$x = \rho \sin \varphi \cos \theta, \quad y = \rho \sin \varphi \sin \theta, \quad z = \rho \cos \varphi,$$

$$\rho^2 = x^2 + y^2 + z^2, \quad dV = \rho^2 \sin \varphi \, d\rho \, d\varphi \, d\theta$$

Flateintegral:

$$d\sigma = |\mathbf{r}_u \times \mathbf{r}_v| \, du \, dv$$

$$\text{For graf } z = f(x, y): \quad d\sigma = \sqrt{1 + f_x^2 + f_y^2} \, dx \, dy$$

Tyngdepunkt for romlige legemer:

$$\bar{x} = \frac{1}{M} \iiint_T x \, dm, \quad \bar{y} = \frac{1}{M} \iiint_T y \, dm, \quad \bar{z} = \frac{1}{M} \iiint_T z \, dm \quad (dm = \delta \, dV)$$

Vektoranalyse:

$$\text{Greens teorem:} \quad \oint_C M \, dx + N \, dy = \iint_R \left(\frac{\partial N}{\partial x} - \frac{\partial M}{\partial y} \right) \, dA$$

$$\text{Divergensteoremet:} \quad \iint_S \mathbf{F} \cdot \mathbf{n} \, d\sigma = \iiint_T \text{div } \mathbf{F} \, dV$$

$$\text{Stokes' teorem:} \quad \oint_C \mathbf{F} \cdot \mathbf{T} \, ds = \iint_S (\text{curl } \mathbf{F}) \cdot \mathbf{n} \, d\sigma$$