Geometria Diferencial de Curvas

1	Triedro de Frenet–Serret	$\vec{T}(t) = \dfrac{\vec{r}\,'(t)}{\lvert\vec{r}\,'(t)\rvert}$ $\vec{N}(t) = \dfrac{\vec{T}\,'(t)}{\lvert\vec{T}\,'(t)\rvert}$ $\vec{B}(t) = \vec{T}(t) \times \vec{N}(t)$
2	Curvatura	$\kappa(t) = \dfrac{\lvert\vec{T}\,'(t)\rvert}{\lvert\vec{r}\,'(t)\rvert} = \dfrac{\lvert\vec{r}\,'(t) \times \vec{r}\,''(t)\rvert}{\lvert\vec{r}\,'(t)\rvert^3}$
3	Raio de curvatura	$\rho(t) = \dfrac{1}{\kappa(t)}$
4	Torção	$\tau(t) = \dfrac{\lvert\vec{B}\,'(t)\rvert}{\lvert\vec{r}\,'(t)\rvert}$

Operador $\vec{\nabla}$

1	Gradiente	$\vec{\nabla} f = \left(\dfrac{\partial f}{\partial x}, \dfrac{\partial f}{\partial y}, \dfrac{\partial f}{\partial z}\right)$
2	Divergente	$\operatorname{div} \vec{F} = \vec{\nabla} \cdot \vec{F} = \dfrac{\partial F_1}{\partial x} + \dfrac{\partial F_2}{\partial y} + \dfrac{\partial F_3}{\partial z}$
3	Rotacional	$\operatorname{rot} \vec{F} = \vec{\nabla} \times \vec{F} = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ \partial/\partial x & \partial/\partial y & \partial/\partial z \\ F_1 & F_2 & F_3 \end{vmatrix}$
2	Laplaciano	$\Delta f = \vec{\nabla}^2 f = \vec{\nabla} \cdot \vec{\nabla} f = \dfrac{\partial^2 f}{\partial x^2} + \dfrac{\partial^2 f}{\partial y^2} + \dfrac{\partial^2 f}{\partial z^2}$

Teoremas de Green, Stokes e Gauss – Hipóteses omitidas

1	Teorema de Green	$\displaystyle\iint_R \left(\frac{\partial F_2}{\partial x} - \frac{\partial F_1}{\partial y}\right) dxdy = \oint_{\partial R} \vec{F} \cdot d\vec{r}$
2	Teorema de Stokes	$\displaystyle\iint_S \operatorname{rot} \vec{F} \cdot \vec{n}\; dA = \oint_{\partial S} \vec{F} \cdot d\vec{r}$
3	Teorema da Divergência de Gauss	$\displaystyle\iiint_T \operatorname{div} \vec{F}\; dxdydz = \iint_{\partial T} \vec{F} \cdot \vec{n}\; dA$