Dolžina krivulje:

$$s(t)=\int_{\alpha}^{\beta}\sqrt{\dot{x}^2+\dot{y}^2+\dot{z}^2}\,dt$$

Tangenta na krivuljo:

-vektorska oblika

$$\vec{r}=\vec{r}_0+\lambda\vec{r}_0$$

-izpis po komponentah

$$\frac{x-x_0}{\dot{x}_0}=\frac{y-y_0}{\dot{y}_0}=\frac{z-z_0}{\dot{z}_0}$$

Normalna ravnina:
-vektorska oblika

$$(\vec{r}-\vec{r}_0)\dot{\vec{r}}_0=0$$

-izpis po komponentah

$$(x-x_0)\dot{x}_0+(y-y_0)\dot{y}_0+(z-z_0)\dot{z}_0=0$$

Normalna ravnina:
-vektorska oblika

$$(\vec{r}-\vec{r}_0)\dot{\vec{r}}_0=0$$

-izpis po komponentah

$$(x-x_0)\dot{x}_0+(y-y_0)\dot{y}_0+(z-z_0)\dot{z}_0=0$$

Funkcionalne determinante (če vsaj ena od njih ni 0 ploskev ne preide v krivuljo):

$$\vec{r}_u\times\vec{r}_v=\begin{vmatrix}\vec{i} & \vec{j} & \vec{k}\\ x_u & y_u & z_u\\ x_v & y_v & z_v\end{vmatrix},\quad \frac{\partial(y,z)}{\partial(u,v)}=\begin{vmatrix}y_u & z_u\\ y_v & z_v\end{vmatrix},\quad \frac{\partial(z,x)}{\partial(u,v)}=\begin{vmatrix}z_u & x_u\\ z_v & x_v\end{vmatrix},\quad \frac{\partial(x,y)}{\partial(u,v)}=\begin{vmatrix}x_u & y_u\\ x_v & y_v\end{vmatrix}$$

Tangentna ravnina:
-vektorska oblika:

$$(\vec{r}-\vec{r}_0)(\vec{r}_u\times\vec{r}_v)=0 \qquad (\vec{r}-\vec{r}_0,\vec{r}_u,\vec{r}_v)=0$$

-izpis po komponentah

$$\frac{\partial(y,z)}{\partial(u,v)}(x-x_0)+\frac{\partial(z,x)}{\partial(u,v)}(y-y_0)+\frac{\partial(x,y)}{\partial(u,v)}(z-z_0)=0$$

-ekspilictna oblika

$$z-z_0=p(x-x_0)+q(y-y_0),\qquad p=\frac{\partial z}{\partial x},\qquad q=\frac{\partial z}{\partial y}$$

-implicitna oblika

$$(x-x_0)\frac{\partial F}{\partial x}+(y-y_0)\frac{\partial F}{\partial y}+(z-z_0)\frac{\partial F}{\partial z}=0$$

Normala na ploskev:
-vektorska oblika

$$\vec{r}-\vec{r}_0=\lambda(\vec{r}_u\times\vec{r}_v)$$

-izpis po komponentah

$$\frac{x-x_0}{p}=\frac{y-y_0}{q}=\frac{z-z_0}{-1}$$

-implicitna oblika

$$\frac{x-x_0}{F_x}=\frac{y-y_0}{F_y}=\frac{z-z_0}{F_z}$$

Enotni vektor normale:

-vektorska oblika

$$\vec{\nu} = \frac{\vec{r}_u \times \vec{r}_v}{\left|\vec{r}_u \times \vec{r}_v\right|}$$

-eksplicitna oblika

$$\vec{\nu} = \left(-\frac{p}{\sqrt{1+p^2+q^2}}, -\frac{q}{\sqrt{1+p^2+q^2}}, \frac{1}{\sqrt{1+p^2+q^2}} \right)$$

Prva fundamentalna forma:

$$ds^2 = Edu^2 + 2Fdudv + Gdv^2, \quad E = \vec{r}_u \cdot \vec{r}_u, \quad F = \vec{r}_u \cdot \vec{r}_v, \quad G = \vec{r}_v \cdot \vec{r}_v$$

Integral s parametrom:

$$F(y) = \int_a^b f(x,y)dx$$

$$\frac{dF(y)}{dy} = \frac{\partial}{\partial y}\int_a^b f(x,y)dx = \int_a^b \frac{\partial f}{\partial y}dx$$

$$F(y) = \int_{u(y)}^{v(y)} f(x,y)dx$$

$$\frac{dF}{dy} = \int_{u(y)}^{v(y)} \frac{\partial f}{\partial y}dx + f(v,y)\frac{dv}{dy} - f(u,y)\frac{du}{dy}$$

$$\int_a^b dx \int_c^d f(x,y)dy = \int_c^d dy \int_a^b f(x,y)dx$$

Dvojni integral:

$$\iint_D f(x,y)dxdy = \int_a^b dx \int_{g(x)}^{h(x)} f(x,y)dy = \int_c^d dy \int_{p(y)}^{q(y)} f(x,y)dx$$

Vpeljava novih spremenljivk:

$$x = x(u,v), \qquad y = y(u,v)$$

-Jacobijeva determinanta

$$J(u,v) = \frac{\partial(x,y)}{\partial(u,v)} = \begin{vmatrix} x_u & x_v \\ y_u & y_v \end{vmatrix} \neq 0$$

-formula za vpeljavo

$$\iint_D f(x,y)dxdy = \iint_\Delta f\left[x(u,v), y(u,v)\right]\left|J(u,v)\right|dudv$$

-element ploščine v krivočrtnih koordinatah

$$d\omega = \left|J(u,v)\right|dudv$$

Posplošeni integral:

$$\iint_D f(x,y)dxdy = \lim_{\varepsilon \to 0} \iint_{D'} f(x,y)dxdy$$