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About the surface and its surface

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Abstract
This is it topic during curve line , his equations , curves of the line length , to length have didn't happen curve line about data is brought .
Key words . Surfaces, surfaces and to the surface have was forms in khaki

In the plain curve line this

$$\begin{cases} x = x(t), \\ y = y(t) \end{cases} \quad (\alpha \le t \le \beta)$$

equations system with (in particular , $y = f(x), (a \le x \le b)$ equation with) to be determined we saw Ravshanki , crooked line $x(t), y(t)$ to functions depend _ If $x(t), y(t)$ functions $[\alpha, \beta]$ continuous at $x'(t), y'(t)$ to derivatives have if so , him smooth curve line it was called Curved lines in theory important from concepts one curve of the line length is a curve to the line drawn broken line of fairy meter limit as defined and his length the following

$$l = \int_{\alpha}^{\beta} \sqrt{x'^2(t) + y'^2(t)}dt$$

with the formula expression in lectures statement done _
In the plain curve line to the concept similar in space surface concept when entered , his to himself special sides there is
In space simple surfaces - sphere, cylinder and that's it similar surfaces and their face _ _ count formulas to the student known .
We below common in appearance surfaces , their face , face to find formulas for the course need to be in volume briefly statement we will
1^0. Surface concept . let's say UOV in the plain Δ in the collection

$$x = x(u, v), \ y = y(u, v), \ z = z(u, v) \qquad (1)$$

functions given are , and they are Δ also continuous let it be $(u_0, v_0) \in \Delta$ point take , above functions at this point values we find :

$$x_0 = x(u_0, v_0), \ y_0 = y(u_0, v_0), \ z_0 = z(u_0, v_0).$$

Harvest has been (x_0, y_0, z_0) the R^3 in space M_0 of the point coordi natas that let 's see : $M_0 = M(x_0, y_0, z_0)$ Ravshanki ,(u, v) point Δ in the collection when it changes (x, y, z) s R^3 in space something S the collection harvest does _ So , (1) relation Δ the collection S to the collection continuously reflection that to look can _
If (1) reflection mutually one valuable reflection if , that is Δ of the collection different $(u, v), (\bar{u}, \bar{v})$ points S of the collection different $(x, y, z), (\bar{x}, \bar{y}, \bar{z})$ to the points reflects _ S the collection R^3 in space surface that to look can _ Usually , it is surfaces simple surfaces is

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called Because of this

$$\begin{cases} x = x(u,v), \\ y = y(u,v), \qquad ((u,v) \in \Delta) \\ z = z(u,v) \end{cases} \qquad (2)$$

equations system of the surface parametric equation he says , in this u and v s parameters .
Specifically ($u = x, v = y$ when) this

$$\begin{cases} x = x, \\ y = y, \\ z = f(x,y) \end{cases}$$

equations system which determines surface

$$z = f(x,y) \qquad (3)$$

equation with is expressed .

D_k collection T_k of orthogonal projection that it was for

$$\mu D_k = \mu T_k \cdot |\cos\gamma_k|$$

b dies in this _ γ_k - S to the surface (ξ_k, η_k, z_k) $(z_k = f(\xi_k, \eta_k))$ nu q tada o ' tka zil gan don't try plain normal OZ bullet i with organize reached corner _
Ravshanki , $\lambda_{P_D} \to 0$ da $\lambda_{P_S} \to 0$ will be
If $\lambda_{P_D} \to 0$ at the following

$$\sum_{k=1}^{n} \mu T_k$$

now _ _ finite to the limit have if _ _ S surface surface have is called the value of the limit while S of the surface face is called So ,

$$\mu S = \lim_{\lambda_{P_D} \to 0} \sum_{k=1}^{n} \mu T_k \ .$$

It is known that

$$\cos\gamma_k = \frac{1}{\sqrt{1 + f_x'^2(\xi_k, \eta_k) + f_y'^2(\xi_k, \eta_k)}}$$

being _

$$\mu T_k = \frac{1}{\cos\gamma_k} \cdot \mu D_k$$

from equality while

$$\sum_{k=1}^{n} \mu T_k = \sum_{k=1}^{n} \sqrt{1 + f_x'^2(\xi_k, \eta_k) + f_y'^2(\xi_k, \eta_k)} \cdot \mu D_k$$

b 's death come What is it ?
Next right of equality on the side now _ _

$$\sqrt{1 + f_x'^2(x,y) + f_y'^2(x,y)}$$

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of the function integral sum will be This function D in the collection continuous , therefore integrable .
So ,

$$\lim_{\lambda_{P_D} \to 0} \sum_{k=1}^{n} \sqrt{1 + f_x'^2(\xi_k, \eta_k) + f_y'^2(\xi_k, \eta_k)} \cdot \mu D_k =$$

$$= \iint_D \sqrt{1 + f_x'^2(x,y) + f_y'^2(x,y)} dxdy.$$

So by doing S of the surface face

$$\mu S == \iint_D \sqrt{1 + f_x'^2(x,y) + f_y'^2(x,y)} dxdy \qquad (4)$$

will be

Exercises

1. This $x^2 + y^2 + z^2 = R$ from the sphere the following $x^2 + y^2 = r^2 (r < R)$ of the cylinder cut received part of face be found
2. This $z = \frac{x^2}{2a} + \frac{y^2}{2b}$ elliptical of a paraboloid the following $\frac{x^2}{a^2} + \frac{y^2}{b^2} = c^2$ inside the cylinder is located part of face be found

Literature

1. Azlarov T. , Mansurov H. Mathematical analysis, volume 2, Tashkent , " Uzbekistan ", 1994, 1995.
2. Khudoyberganov G., Varisov A., Mansurov H. , Shoim q ulov B. Mathematical analysis, volume 3 , Tashkent , " UzMU ", 2006.
3. Arkhipov G., Sadovnichiy V., Chubarikov V. Lektsii po matematicheskomu analizu, Moscow, "Vysshaya shkola", 1999.
4. Ilin V., Sadovnichiy V., Sendov B. Mathematical analysis, Moscow "Nauka", 1979.
5. Kudryavtsev L. Course of mathematical analysis TT, 2, 1973.
6. Rudin U. Basic mathematical analysis, Moscow "Mir", 1976.
7. Dorogovtsev A. Mathematical analysis, Kiev, "Vysshaya shkola", 1985.
8. Fichtengolts G. Course of differential and integral calculation, TT, II , III , Moscow "fizmat-lit", 2001 .
9. Sadullaev A. , Mansurov H. , Khudoyberganov G., Varisov A., G'ulomov R. From the course of mathematical analysis example and issues collection , Volume 2, Tashkent , " Uzbekistan ", 1993, 1996.
10. Demidovich B. Sbornik zadach i uprajneniy po matematicheskomu analizu, Moscow, "Nauka", 1990.