

3D моделирование



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www.geogebra.org ШарПлоскостьКасательная - GeoGebra

GeoGebra Calculator Suite 3D Calculator

Алгебра

Инструменты

$\phi = 0.06$
-3.14 ————— π

$B = (R \sin(\theta) \cos(\phi), R \sin(\theta) \sin(\phi), R \cos(\theta))$
→ (3.43, 0.2, 3.63)

$A = \text{Пересечение(ОсьАбсцисс, ОсьАпplikат)}$
→ (0, 0, 0)

$u = \text{Вектор}(A, B)$
→ $\begin{pmatrix} 3.43 \\ 0.2 \\ 3.63 \end{pmatrix}$

$p : \text{ПерпендикулярнаяПлоскость}(B, u)$
→ $3.43x + 0.2y + 3.63z = 25$

Ввод...

GeoGebra Calculator Suite

The 3D view shows a red sphere with a light blue tangent plane. A point B is marked on the sphere, and a vector u is shown originating from the origin (0,0,0) and pointing towards B. The coordinate axes are labeled with values like 8, 6, 4, 2, 0, -2, -4, -6, -8, -10.



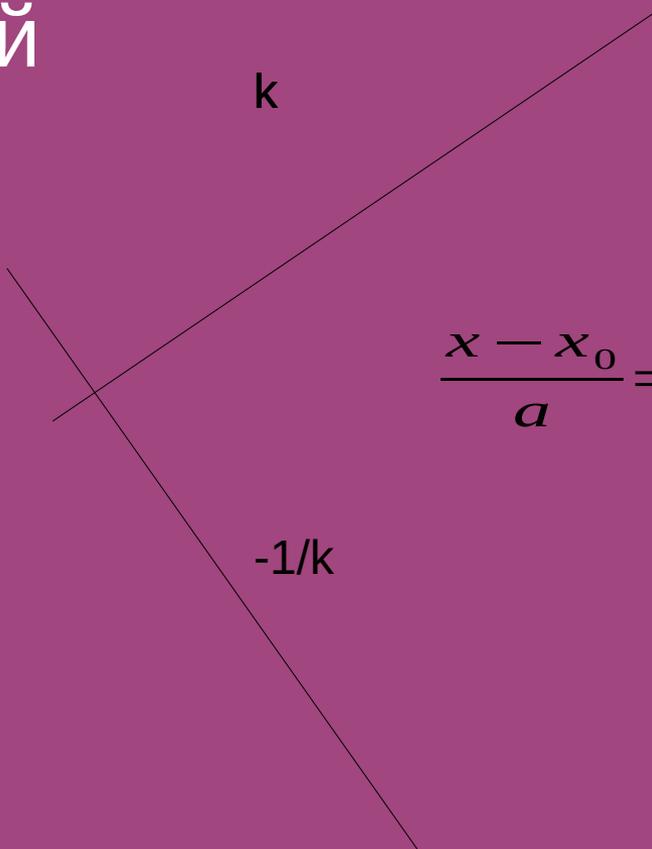
Уравнение прямой



$$y = kx + b$$

$$\operatorname{tg}\alpha = k$$

$$y = -\frac{1}{k}x + b$$



$$\frac{x - x_0}{a} = \frac{y - y_0}{b} = \frac{z - z_0}{c}$$

Уравнение плоскости



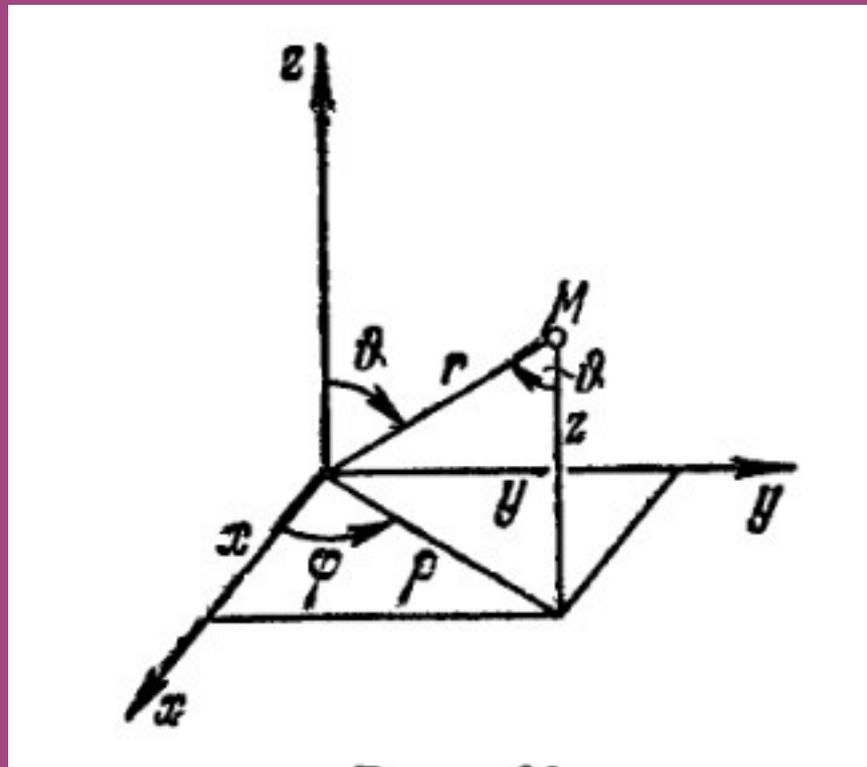
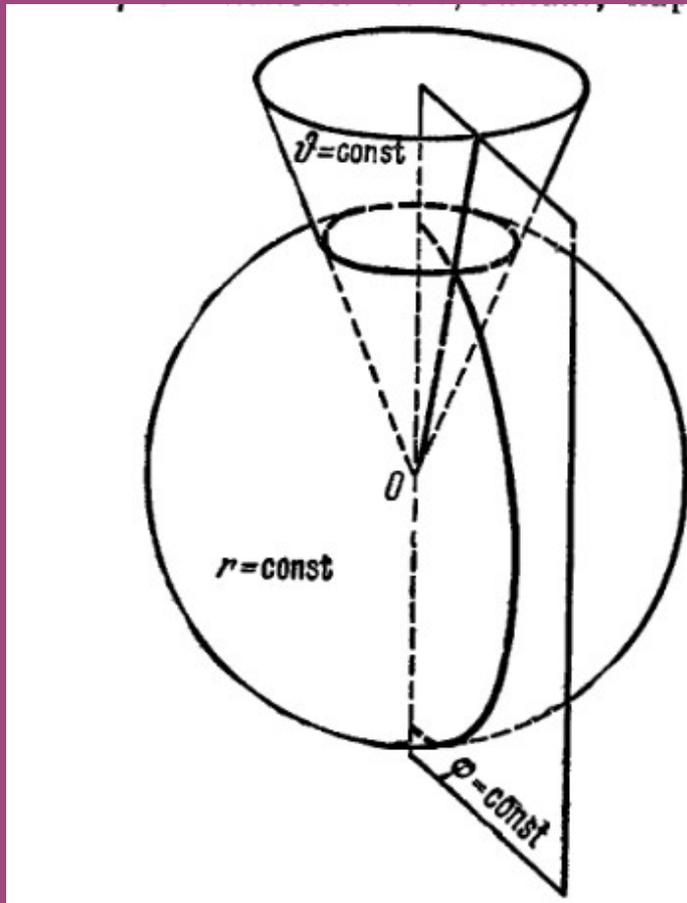
$$Ax + By + Cz = d$$

The screenshot shows the GeoGebra 3D Calculator interface. The browser address bar displays www.geogebra.org and the page title is "ШарПлоскостьКасательная - GeoGebra". The interface includes a sidebar with "Алгебра" (Algebra) and "Инструменты" (Tools) sections. The algebra view on the left contains the following objects:

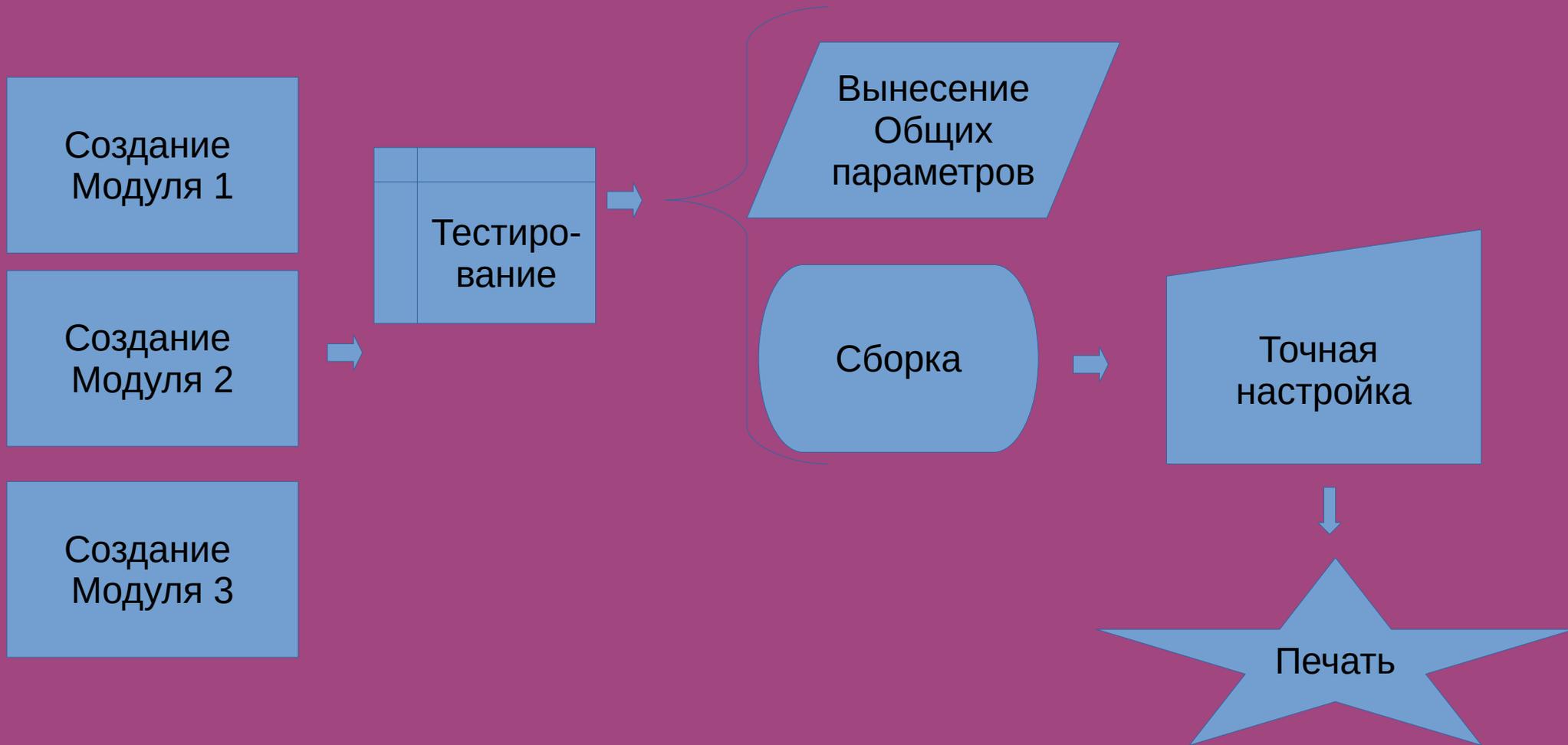
- $\phi = 0.06$ with a slider ranging from -3.14 to π .
- $B = (R \sin(\theta) \cos(\phi), R \sin(\theta) \sin(\phi), R \cos(\theta))$
 $\rightarrow (3.43, 0.2, 3.63)$
- $A = \text{Пересечение(ОсьАбсцисс, ОсьАпplikат)}$
 $\rightarrow (0, 0, 0)$
- $u = \text{Вектор}(A, B)$
 $\rightarrow \begin{pmatrix} 3.43 \\ 0.2 \\ 3.63 \end{pmatrix}$
- $p : \text{ПерпендикулярнаяПлоскость}(B, u)$

The 3D view on the right shows a red sphere centered at the origin of a 3D coordinate system. A light blue plane is tangent to the sphere at point B. The vector u is shown as a dashed red arrow pointing from the origin to point B. The z-axis is labeled with values 2, 4, 6, and 8. The x and y axes are also visible with numerical labels.

Сферическая система координат



Моделирование в OpenScad



Основные объекты, приёмы



`square([edge,edge], center = true);`

`Cube([5,5,5], center = false);`

`translate([5,5,5])`
`rotate(0,0,90)`
`cube([5,5,5], center = false);`

`difference()`

`union()`

`intersection()`

