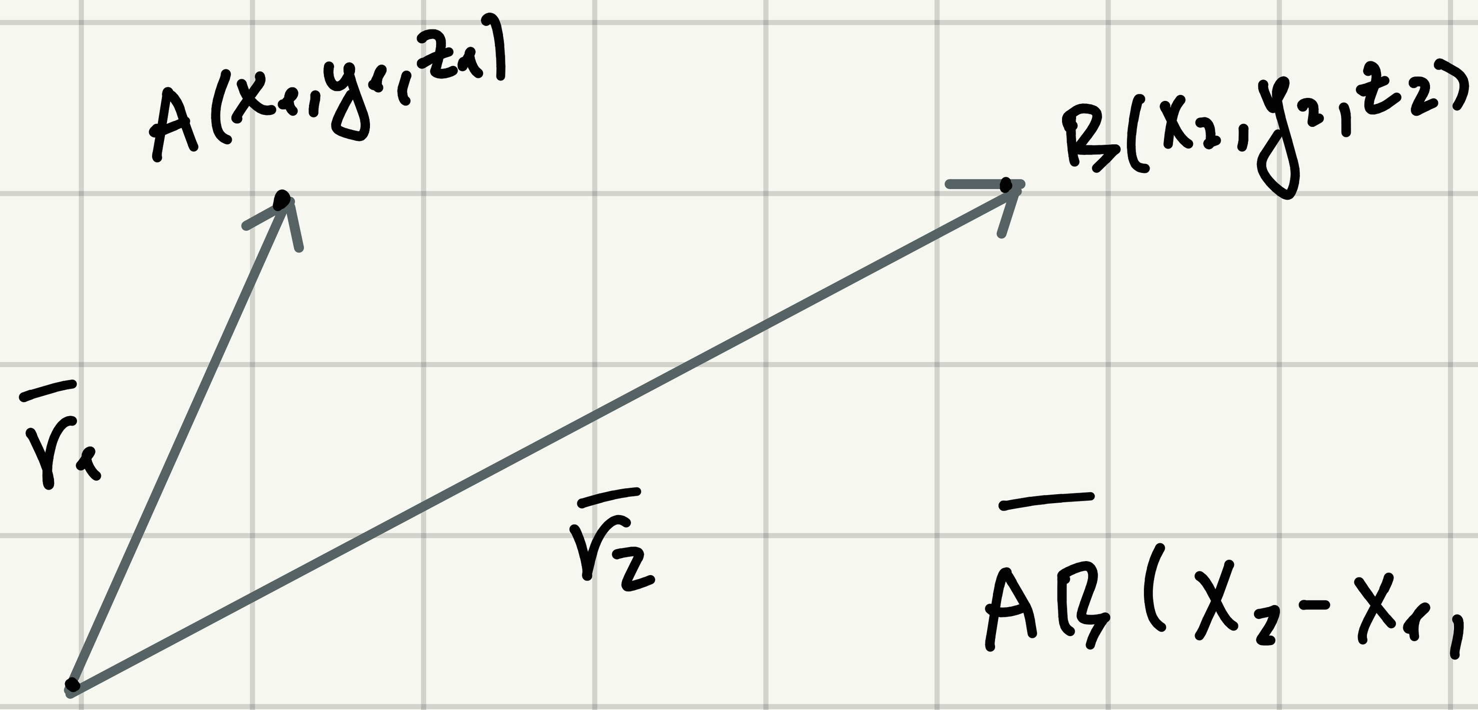
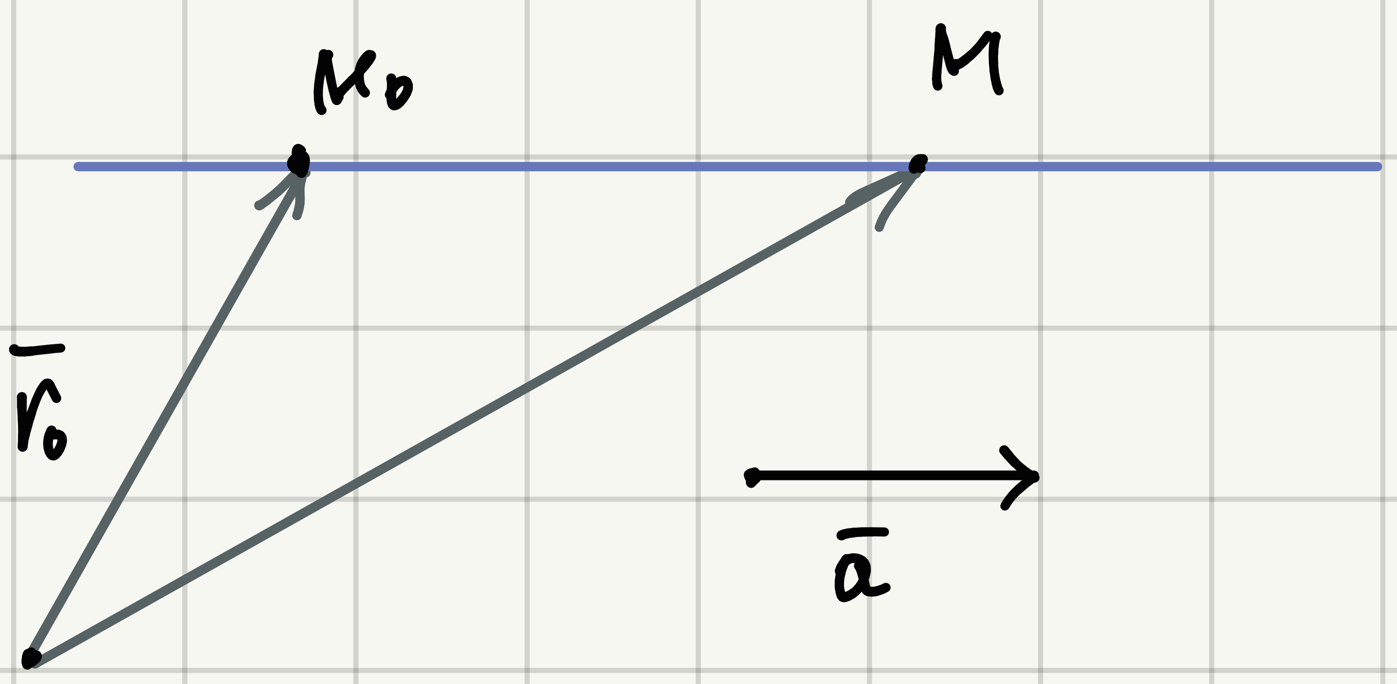


$\overline{AB}(x_2-x_1, y_2-y_1, z_2-z_1)$

$$|AB|^2=(\bar r_2-\bar r_1, \bar r_2-\bar r_1)=(x_2-x_1)\bar e_1+(y_2-y_1)\bar e_2+(z_2-z_1)\bar e_3=$$

$$=(x_2-x_1)^2(e_1,e_1)+(y_2-y_1)^2(e_2,e_2)+(z_2-z_1)(e_3,e_3)^2+$$

$$+2\left[(x_2-x_1)(y_2-y_1)(e_2,e_1)+(x_2-x_1)(z_2-z_1)(e_1,e_3)+2(y_2-y_1)(z_2-z_1)(e_2,e_1)\right]$$



$\bar n(A,B)=0$

$Am+Bn=0$ ← только в ОНБ

$\bar r(x,y)$ $\bar a(m,n)$

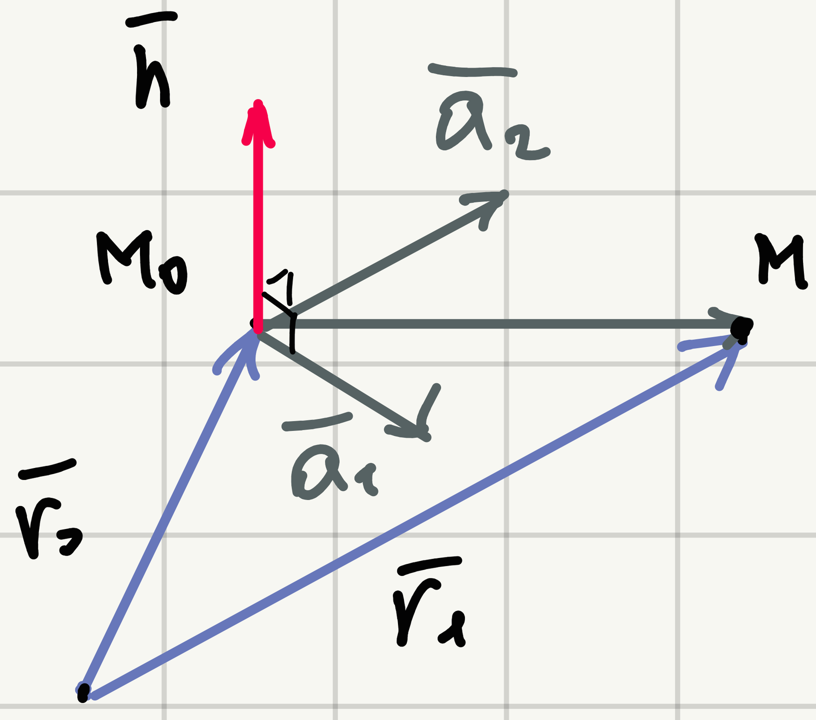
$$\begin{cases} x=x_0+mt \\ y=y_0+nt \end{cases} \Leftrightarrow \frac{x-x_0}{m}=\frac{y-y_0}{n}=t$$

$$\Downarrow$$

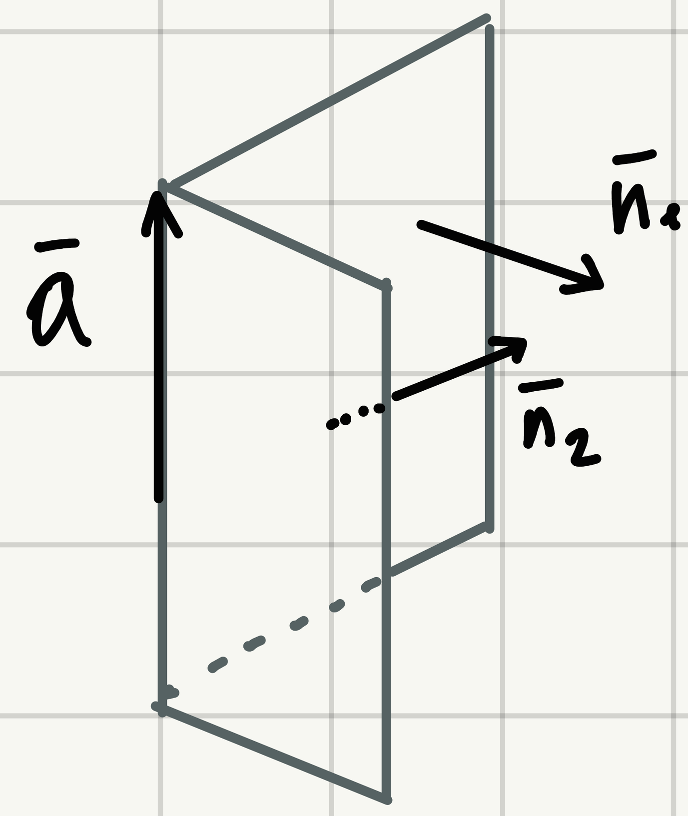
$Ax+By+C=0$ $\qquad n(x-x_0)-m(y-y_0)=0$

$Ax+By+Cz+D=0$ – общее ур-е плоскости в пространстве.

$$D=-Ax_0-By_0-Cz_0$$



$$\begin{cases} x = x_a + u m_1 + v m_2 \\ y = y_a + u n_1 + v p_2 \\ z = z_a + u p_1 + v p_2 \end{cases}$$



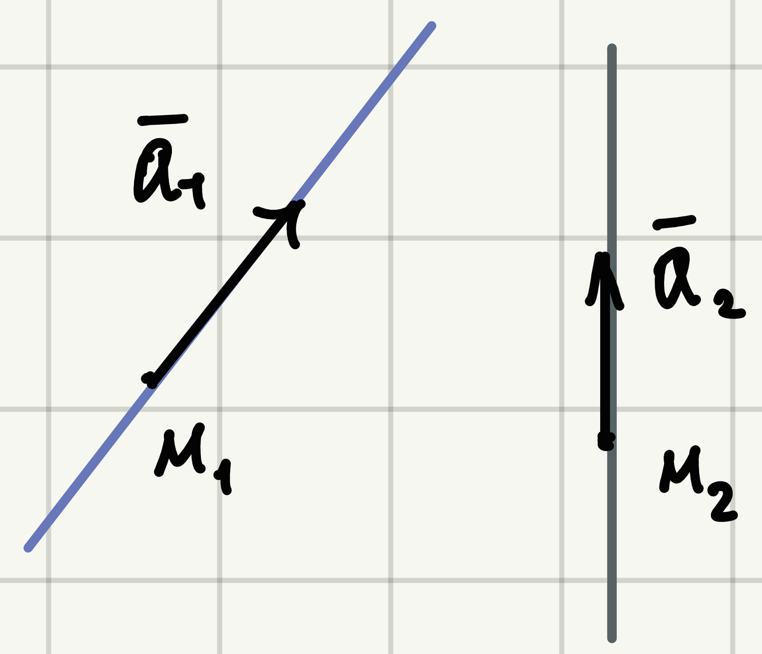
$$\begin{cases} x = -\frac{B}{A} y - \frac{C}{A} z - \frac{D}{A} \\ y = u \\ z = v \end{cases}$$

$$\Pi p_{\bar n} (\bar r_1 - \bar r_0) = \frac{(\bar r_1 - \bar r_0, \bar n)}{|\bar n|} = \frac{(\bar r_1, \bar n) - (\bar r_0, \bar n)}{|\bar n|} =$$

$$= \frac{Ax_1 + By_1 - Ax_0 - By_0}{\sqrt{A^2+B^2}} = \frac{Ax_1 + By + C}{\sqrt{A^2+B^2}}$$

$$d = \frac{|[\overline{M_0M_1}, \bar a]|}{|\bar a|} = \frac{\left| \begin{vmatrix} \bar i & \bar j & \bar k \\ x_1 - x_0 & y_1 - y_0 & z_1 - z_0 \\ m & n & p \end{vmatrix} \right|}{\sqrt{n^2 + m^2 + p^2}} =$$

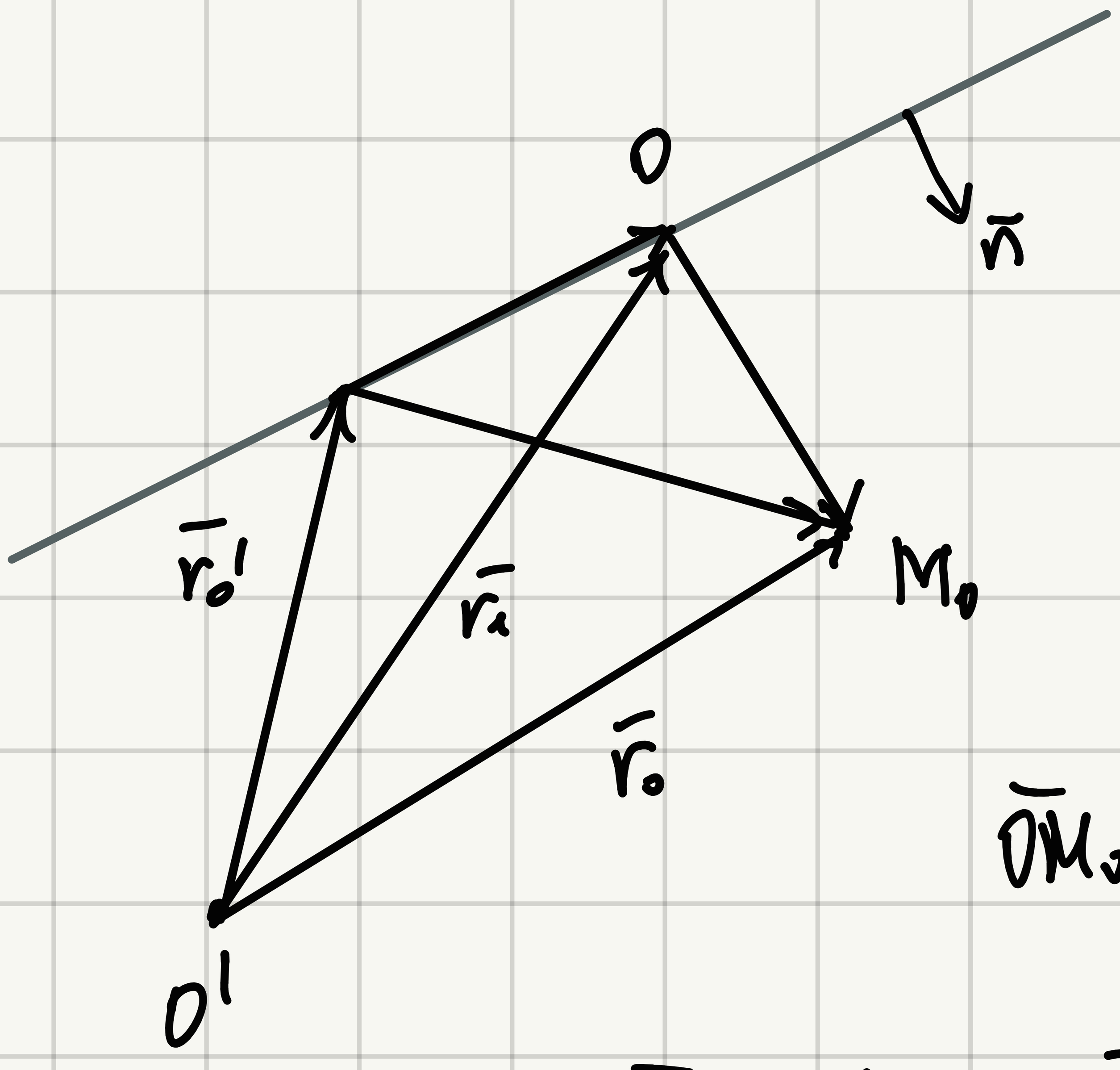
$$= \frac{\sqrt{\begin{vmatrix} y_1 - y_0 & z_1 - z_0 \\ n & p \end{vmatrix}^2 + \;..}}{\sqrt{m^2 + n^2 + p^2}}$$



$$d = \frac{|(\overline{M_1M_2}, \bar a_1, \bar a_2)|}{|[\bar a_1, \bar a_2]|} = \frac{\begin{vmatrix} x_2 - x_1 & y_2 - y_1 & z_2 - z_1 \\ m_1 & n_1 & p_1 \\ m_2 & n_2 & p_2 \end{vmatrix}}{\begin{vmatrix} \bar i & \bar j & \bar k \\ m_1 & n_1 & p_1 \\ m_2 & n_2 & p_2 \end{vmatrix}}$$

5.4. M_0, $\bar{r}_0$ $\quad (\bar{r}, \bar{n}) = D$

1) радиус-вектор проекции точки M_0



$$\Pi p_{\bar{a}} \bar{b} = \frac{(\bar{b}, \bar{a})}{|\bar{a}|^2} \cdot \bar{a}$$

$$\bar{OM_0} = \Pi p_{\bar{n}} (r_0 - r_0') = \frac{(\bar{r}_0 - \bar{r}_0', \bar{n})}{|\bar{n}|^2} \cdot \bar{n}$$

$$O'O = \bar{r}_0 - \bar{OM_0} = \bar{r}_0 - \frac{(\bar{r}_0, \bar{n})}{|\bar{n}|^2} \cdot \bar{n} + \frac{(r_0', n)}{|\bar{n}|^2} \cdot \bar{n} =$$

$$= \bar{r}_0 - \frac{(\bar{r}_0, \bar{n})}{|\bar{n}|^2} \cdot \bar{n} + \frac{D \cdot \bar{n}}{|\bar{n}|^2}$$