• $(\overline{a}\cdot\overline{b}) = x_1x_2 + y_1y_2$; • $|\overline{a}| = \sqrt{x_1^2 + y_1^2}$; • $< \overline{a}, \overline{b}, \overline{c} > = ([\overline{a}, \overline{b}], \overline{c}) = \begin{bmatrix} a_x & a_y & a_z \\ b_x & b_y & b_z \\ c_x & c_y & c_z \end{bmatrix}$;

• $(\overline{a}; \overline{b}) = |\overline{a}|\cdot|\overline{b}|\cdot \cos\alpha$; • $|[\overline{a}; \overline{b}]| = |\overline{a}|\cdot|\overline{b}|\cdot \sin\alpha$; $\begin{bmatrix} \vec{i} & \vec{j} & \vec{k} \\ a_x & a_y & a_z \\ b_x & b_y & b_z \end{bmatrix}$

1. $A(x - x_0) + B(y - y_0) = 0;\ M_0(x_0; y_0),\ \overline{N} = \{A; B\}$; **2.** $\frac{x-x_0}{m} = \frac{y-y_0}{n};\ M_0(x_0; y_0),\ \overline{s} = \{m; n\}$;

3. $x = mt + x_0;\ y = nt + y_0;\ M_0(x_0; y_0),\ \overline{s} = \{m; n\}$; **4.** $y - y_0 = l = k(x - x_0);\ k = tg\,\phi = -\frac{A}{B} = \frac{n}{m};\ M_0(x_0; y_0)$;

5. $\frac{x-x_1}{x_2-x_1} = \frac{y-y_1}{y_2-y_1};\ M_1(x_0; y_0),\ M_2(x_2; y_2)$;

1. $l_1\colon \frac{x-x_1}{m_1} = \frac{y-y_1}{n_1};\ l_2\colon \frac{x-x_2}{m_2} = \frac{y-y_2}{n_2};\ \overline{s_1} = \{m_1; n_1\},\ \overline{s_2} = \{m_2; n_2\};\ \cos\phi = \frac{\overline{(s_1\cdot s_2)}}{|\overline{s_1}|\cdot|\overline{s_2}|}$;

2. $l_1\colon A_1x + B_1y + C = 0,\ l_2\colon A_2x + B_2y + C_2 = 0;\ \overline{N_1} = \{A_1; B_1\};\ \overline{N_2} = \{A_2; B_2\};\ \cos\phi = \frac{\overline{(N_1\cdot N_2)}}{|\overline{N_1}|\cdot|\overline{N_2}|}$

• $M_1(x_1; y_1);\ l\colon Ax + By + C = 0;\ d = \frac{|Ax_1 + By_1 + C|}{\sqrt{A^2 + B^2}}$;

1. $A(x - x_0) + B(y - y_0) + C(z - z_0) = 0; M_0(x_0; y_0; z_0); \overline{N} = \{A; B; C\}$; **2.** $Ax + By + Cz + D = 0; \overline{N} = \{A; B; C\}$;

3. $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1$; **4.** $M_1(x_1; y_1; z_1),\ M_2(x_2; y_2; z_2),\ M_3(x_3; y_3; z_3);\ \begin{bmatrix} x - x_1 & y - y_1 & z - z_1 \\ x_2 - x_1 & y_2 - y_1 & z_2 - z_1 \\ x_3 - x_1 & y_3 - y_1 & z_3 - z_1 \end{bmatrix} = 0$

1. $\frac{x-x_0}{x_1-x_0} = \frac{y-y_0}{y_1-y_0} = \frac{z-z_0}{z_1-z_0}$**;** $M_0(x_0; y_0; z_0),\ M_1(x_1; y_1; z_1)$;

1. $\overline{AB} = \{x_B - x_A; y_B - y_A; z_B - z_A\}$**;** **2.** $\overline{a} = x_1\overline{i} + y_1\overline{j} + z_1\overline{k};\ \overline{a} = \{x_1; y_1; z_1\}$; **3.** $|\overline{a}| = \sqrt{(\overline{a})^2}$; $|\overline{a}| = \sqrt{x_1^2 + y_1^2 + z_1^2}$;

4. $\cos\alpha = \frac{x}{|\overline{a}|};\ \cos\beta = \frac{y}{|\overline{a}|};\ \cos\gamma = \frac{z}{|\overline{a}|};\ \cos\alpha = \frac{x}{\sqrt{x_1^2+y_1^2+z_1^2}};\ \cos\beta = \frac{y}{\sqrt{x_1^2+y_1^2+z_1^2}};\ \cos\gamma = \frac{z}{\sqrt{x_1^2+y_1^2+z_1^2}}$;

5. $\overline{a}^0 = \frac{\overline{a}}{|\overline{a}|};\ \overline{a}^0 = \{\cos\alpha;\ \cos\beta;\ \cos\gamma\}$;

6. $\overline{c} = \alpha\overline{a} + \beta\overline{b} \Leftrightarrow \begin{cases} \alpha x_1 + \beta x_2 & = x_3 \\ \alpha y_1 + \beta y_2 & = y_3 \end{cases}$; $\overline{d} = \alpha\overline{a} + \beta\overline{b} + \gamma\overline{c} \Leftrightarrow \begin{cases} \alpha x_1 + \beta x_2 + \gamma x_3 & = x_4 \\ \alpha y_1 + \beta y_2 + \gamma y_3 & = y_4 \\ \alpha z_1 + \beta z_2 + \gamma z_3 & = z_4 \end{cases}$;

7. $\overline{a} = \overline{b} \Leftrightarrow x_1 = x_2;\ y_1 = y_2; z_1 = z_2$; **8.** $\overline{b} = \gamma\overline{a} \Leftrightarrow \frac{x_2}{x_1} = \frac{y_2}{y_1} = \frac{z_2}{z_1}$; **9.** $\overline{a} \pm \overline{b} \Leftrightarrow \{x_1 \pm x_2; y_1 \pm y_2; z_1 \pm z_2\}$;

10. $M(x_M; y_M; z_M) \Leftrightarrow \frac{AB}{\lambda},\ \overline{AM} = \lambda\overline{MB};\ A(x_A; y_A; z_A),\ B(x_B; y_B; z_B);\ x_M = \frac{x_A+\lambda x_B}{1+\lambda}, y_M = \frac{y_A+\lambda y_B}{1+\lambda}, z_M = \frac{z_A+\lambda z_B}{1+\lambda}$;

• $S_{par} = |[\overline{a}; \overline{b}]|$; • $S_{triangle} = \frac{S_{par}}{2}$; • $V_{par} = < \overline{a}, \overline{b}, \overline{c} >$; • $V_{pyr} = \frac{V_{par}}{6}$;