

(22.05.20)

№ 5.2.2(2)

$$M(x, y, z), O_y$$

$$1) O_y \in L \Rightarrow Ax + Cz = 0, B = D = 0$$

$$2) M(x, y, z) = M(-2; 3; 1)$$

$$x = -2, z = 1$$

$$A(-2) + C \cdot 1 = 0$$

$$-2A + C = 0 \Rightarrow A = \frac{1}{2}C$$

$$\frac{1}{2}Cx + Cz = 0 \Rightarrow C(\frac{1}{2}x + z) = 0 \quad | : C \Rightarrow$$

$$\Rightarrow \frac{1}{2}x + z = 0 \quad | \cdot 2 \Rightarrow x + 2z = 0$$

№ 5.2.3

$$1) A(5; -4; 6) \in L, L \perp O_x$$

$$L \perp O_x \Rightarrow L \parallel O_{y2} \Rightarrow B = C = 0, Ax + D = 0$$

$$A(5; -4; 6) \in L \Rightarrow x = 5$$

$$A \cdot 5 + D = 0 \Rightarrow D = -5A$$

$$Ax - 5A = 0 \Rightarrow A(x - 5) = 0 \quad | : A \Rightarrow$$

$$x - 5 = 0$$

$$2) A(5; -4; 6) \in L$$

$$d_1 = d_2 = d_3, \text{ где}$$

$$\left. \begin{array}{l} d_1 \text{ отрезок на } O_x \\ d_2 \text{ отрезок на } O_y \\ d_3 \text{ отрезок на } O_z \end{array} \right\} \begin{array}{l} \text{на расстоянии} \\ \text{от начала} \\ \text{осей}$$

$$\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1 \quad \begin{matrix} a, b, c > 0 \\ a=b=c \end{matrix}$$

$$\frac{x}{a} + \frac{y}{a} + \frac{z}{a} = 1 \Rightarrow \frac{x}{a} + \frac{y}{a} + \frac{z}{a} = 1 \Rightarrow \frac{x+y+z}{a} = 1 \Rightarrow x+y+z = a$$

$$\frac{x}{7} + \frac{y}{7} + \frac{z}{7} = 1$$

N 5.2.4.

$$L: 2x - 6y + 3z - 14 = 0$$

$$1) R = \frac{1}{\pm \sqrt{A^2 + B^2 + C^2}} = \frac{1}{\pm \sqrt{49}} = \pm \frac{1}{7}$$

$$2) D = -14 < 0 \Rightarrow R > 0 \Rightarrow R = \frac{1}{7}$$

$$3) \frac{1}{7}(2x - 6y + 3z - 14 = 0) = 0$$

$$\frac{2}{7}x - \frac{6}{7}y + \frac{3}{7}z - 2 = 0$$

N 5.2.5.

$$\Theta: 3x - 4y + 5z - 10 = 0$$

$$\vec{a} \perp \Theta$$

$$\begin{aligned} \cos \alpha, \quad \alpha &= \vec{a} \wedge O_x \\ \cos \beta, \quad \beta &= \vec{a} \wedge O_y \\ \cos \gamma, \quad \gamma &= \vec{a} \wedge O_z \end{aligned}$$

\vec{a} - Jaeger-vektor (om $O(0,0,0)$ go Θ)

$$1) R = \frac{1}{\sqrt{9+16+25}} = \frac{1}{5\sqrt{2}} = \frac{\sqrt{2}}{10}$$

$$\vec{r} \perp \Theta$$

$$x \cos \alpha + y \cos \beta + z \cos \gamma - p = 0$$

$$\left. \begin{aligned} \alpha &= \vec{r} \wedge \vec{Ox} \\ \beta &= \vec{r} \wedge \vec{Oy} \\ \gamma &= \vec{r} \wedge \vec{Oz} \end{aligned} \right\} \text{ где } \vec{r} = \text{векторный радиус, на ось } \vec{r} \perp \Theta$$

$$\vec{r} \perp \Theta, \vec{r} \perp \Theta \Rightarrow \alpha, \beta, \gamma - \text{необходимые условия}$$

$$2) \frac{\sqrt{2}}{10} (3x - 4y + 5z - 10) = 0$$

$$\frac{3\sqrt{2}}{10}x - \frac{4\sqrt{2}}{5}y + \frac{\sqrt{2}}{2}z - \sqrt{2} = 0$$

$$3) \text{ Тогда } \cos \alpha = \frac{3\sqrt{2}}{10}, \cos \beta = \frac{-2\sqrt{2}}{5}, \cos \gamma = \frac{\sqrt{2}}{2}$$