

2) 16.

$$1) \frac{x-11}{12} = \frac{y+8}{4} \Rightarrow \vec{a}(12, 4)$$

$$\vec{r}_0(11, -8)$$

$$\vec{r} = \vec{r}_0 + \alpha \vec{a}$$

$$2) l_1: -4x - 8y = 11 \Rightarrow l_1: \begin{cases} x = x_0 + \alpha_1 t \\ y = y_0 + \alpha_2 t \end{cases}$$

$$l_2: \frac{x-3}{11} = \frac{y+8}{-14} \Rightarrow l_2: \begin{cases} x = 3 + 11t \\ y = -8 - 14t \end{cases}$$

$$B \ l_1: \vec{n}(-4, -8)$$

$$(\vec{r}_0, \vec{n}) = 11$$

\vec{I}^n crossed

$$l_2: \frac{x-3}{11} = \frac{y+8}{-14} \Rightarrow -14x - 11y = 88 - 92$$

$$\begin{cases} 14x + 11y = -46/2 \\ 4x + 8y = -11/(-2) \end{cases} \Leftrightarrow \begin{cases} x = \\ y = \frac{15}{34} \end{cases}$$

$$\begin{cases} 28x + 22y = -32 \\ -28x - 56y = 77 \end{cases} \Rightarrow \begin{cases} 112x + 88y = -368 \\ -74x - 98y = 121 \end{cases}$$

$$34y = 15 \quad 60x = -247 \quad x = -\frac{247}{60}$$

$$3) A(1, -2)$$

$$L: -8x + 14y = 10 \Rightarrow \vec{n}(-8, 14)$$

Для L' \vec{n} - норм вектор, т.к. $L' \perp L \Rightarrow$

$$\Rightarrow L': \frac{x-1}{-8} = \frac{y+2}{14} \Rightarrow 14x + 8y = -21/2$$

$$7x + 4y = -1$$

N5.

$$L_1: -13x + 2y + (-4a - 4)z = -167$$

$$L_2: (-a^2 - 5a - 97) + 14y + 28z = 28$$

$$\left\{ \begin{array}{l} D_1 \neq \lambda D_2 \\ \vec{n}_1 = \lambda \vec{n}_2 \end{array} \right. \Leftrightarrow L_1 \parallel L_2$$

$$\vec{n}_1 = \lambda \vec{n}_2 \Leftrightarrow \begin{cases} n'_x = \lambda n''_x \\ n'_y = \lambda n''_y \\ n'_z = \lambda n''_z \end{cases} \begin{cases} -13 = \lambda(-a^2 - 5a - 97) \quad (***) \\ 2 = \lambda \cdot 14 \quad (*) \\ -4a - 4 = \lambda \cdot 28 \quad (**) \end{cases}$$

$$\text{Из } (*) \lambda = \frac{1}{7} \Rightarrow \text{Из } (**) \quad 4a + 4 = -\frac{1}{7} \cdot 28; \quad 4a = -8; \quad a = -2$$

$$\text{Проверяем для } (***): \quad -13 = \frac{1}{7}(-4 + 10 - 97)$$

$$-13 = \frac{1}{7} \cdot (-91) \quad (\text{верно})$$

$$\text{Т.к. } D_1 = -167 \neq 4 = \frac{1}{7} \cdot 28 = D_2 \cdot \lambda, \text{ то } \text{н.п.}$$

$$a = -2 \quad L_1 \parallel L_2$$

$$\text{Ответ: } a = -2.$$

Nr.

$$L_1: [\vec{a}, 14\vec{i} + 4\vec{j} - 6\vec{k}] = -104\vec{i} + 220\vec{j} - 36\vec{k}$$

$$L_2: [\vec{a}, -7\vec{i} - \vec{j} + 12\vec{k}] = 107\vec{i} - 137\vec{j} + 51\vec{k}$$

$$\vec{a}_1 (14, 4, -6)$$

$$\vec{a}_2 (-7, -1, 12)$$

$$\vec{a}_0 = \frac{-(\vec{a}_1, \vec{a}_2)}{(\vec{a}_1, \vec{a}_1)}$$

$$[\vec{a}_1, \vec{a}_2] = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ 14 & 4 & -6 \\ -7 & -1 & 12 \end{vmatrix} = 936\vec{i} + 1968\vec{j} + 3496\vec{k}$$

$$[\vec{a}_2, \vec{a}_1] = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ -7 & -1 & 12 \\ 14 & -17 & 9 \end{vmatrix} = 1593\vec{i} + 1641\vec{j} + 1066\vec{k}$$

$$\vec{a}_0 = \frac{[\vec{a}_1, \vec{a}_2]}{(\vec{a}_1, \vec{a}_1)} = \frac{936\vec{i} + 1968\vec{j} + 3496\vec{k}}{248} = \frac{117}{31}\vec{i} + \frac{246}{31}\vec{j} + \frac{437}{31}\vec{k}$$

$$\vec{a}_0 = \frac{[\vec{a}_2, \vec{a}_1]}{(\vec{a}_2, \vec{a}_2)} = \frac{1593\vec{i} + 1641\vec{j} + 1066\vec{k}}{194} = \frac{1593}{194}\vec{i} + \frac{1641}{194}\vec{j} + \frac{533}{97}\vec{k}$$

$$L_1: \begin{cases} x = \frac{117}{31} + 194t \\ y = \frac{246}{31} + 4t \\ z = \frac{437}{31} - 6t \end{cases}$$

$$L_2: \begin{cases} x = \frac{1593}{194} - 7t \\ y = \frac{1641}{194} - t \\ z = \frac{533}{97} + 12t \end{cases}$$

$$\begin{cases} t_1 = -\frac{12}{101} \\ t_2 = \frac{101}{1397} \end{cases}$$

$$\begin{cases} x = 3 \\ y = \frac{54}{7} (7.71) \\ z = \frac{101}{7} (14.43) \end{cases}$$