

~~2352~~ 24252 l_1, l_2

29.05.20

$$1) l_1: y = 2x - 3; l_2: y = \frac{1}{2}x + 5$$

$$\operatorname{tg} \varphi = \left| \frac{k_2 - k_1}{1 + k_1 \cdot k_2} \right| = \left| \frac{1/2 - 2}{1 + 1/2 \cdot 2} \right| = \left| -\frac{3}{4} \right| = \frac{3}{4}$$

$$\varphi = \arctg 3/4 \approx 36.86989765 \approx 37^\circ$$

$$2) l_1: 2x - 3y + 10 = 0;$$

$$l_2: 5x - y + 4 = 0$$

$$\operatorname{tg} \varphi = \left| \frac{A_1 B_2 - A_2 B_1}{A_1 A_2 + B_1 B_2} \right| = \left| \frac{2 \cdot (-1) - 5 \cdot (-3)}{2 \cdot 5 + (-3) \cdot (-1)} \right| = \left| \frac{13}{13} \right| =$$

$= 1$

$$\varphi = \arctg 1 = 45^\circ = \pi/4$$

$$3) l_1: y = 3/4x - 2$$

$$l_2: 8x + 6y + 5 = 0$$

$$\begin{cases} l_1: 3/4x - y - 2 = 0 \\ l_2: 8x + 6y + 5 = 0 \end{cases}$$

$$\operatorname{tg} \varphi = \left| \frac{3/4 \cdot 6 - (8 \cdot -1)}{3/4 \cdot 8 + (6 \cdot -1)} \right| = \left| \frac{9/2 + 8}{6 - 6} \right| = \infty$$

$$\text{tg } \varphi = \infty$$

$$\checkmark \quad A_1 A_2 + B_1 B_2 = 0 \Rightarrow L_1 \perp L_2 \Rightarrow \boxed{\varphi = 90^\circ}$$

$$4) \quad L_1: y = 5x + 1$$

$$L_2: y = 5x - 2$$

$$\begin{matrix} K_1 = 5 \\ K_2 = 5 \end{matrix} \quad \Bigg| \quad \Rightarrow K_1 = K_2 \Rightarrow L_1 \parallel L_2$$

$$\text{tg } \varphi \left| \frac{K_2 - K_1}{1 + K_1 K_2} \right| = \left| \frac{5 - 5}{1 + 25} \right| = \left| \frac{0}{26} \right| = 0$$

~4257

$$\underline{L - ? : a) L_1 \perp L_2}$$

$$L_1: 3x - 2y + 5 = 0$$

$$L_2: x + 2y - 9 = 0$$

$$L_3: 2x + y + 6 = 0$$

$$L_1 \cap L_2 = A; \quad L_4 = ? : A \in L_4, \quad L_4 \parallel L_3$$

$$1) A(x; y) = ?$$

$$L \cap L_2 = A \Rightarrow \begin{cases} L_1: 3x - 2y + 5 = 0 \\ L_2: x + 2y - 9 = 0 \end{cases}$$

$$\begin{cases} 3 \cdot (9 - 2y) - 2y + 5 = 0 \\ x = 9 - 2y \end{cases}$$

$$\begin{cases} -8y = -32 \\ x = 9 - 2y \end{cases}$$

$$\begin{cases} y = 4 \\ x = 9 - 8 = 1 \end{cases}$$

$$A(1; 4)$$

$$2) L_3: 2x + y + 6 = 0$$

$$y = -2x - 6 \Rightarrow k_3 = -2$$



$$x_1 = -2$$



$$y = -2x + b$$

$$\begin{aligned} 1) & \text{ } b = 9 \\ 2) & \text{ } b = 6 \end{aligned}$$

$$3) L_4: y = -2x + 6$$

$$4.2. \begin{cases} 53 - 56 \\ 58 - 61 \end{cases} D.3$$

$$\sim 4.2.62$$

$$① M_1(-3; 1) \quad L: 4x - y - 1 = 0$$

$$M_2(x_2; y_2) \quad \text{сумма } (1) M_1 \text{ on } L$$



$$1) L_2: L_2 \perp L_1, M_1 \in L_2$$

$$2) M \in L_2 = M$$

$$3) M_2 = (M_1, M) = (M_2, M)$$

$$② L_2 \perp L_1 \Rightarrow 1) A_1 + B_1 \cdot B_2 = 0$$

$$2) 1 + k_1 \cdot k_2 = 0$$

$$y = 4x - 1 \Rightarrow k_1 = 4$$

$$1 + k_1 \cdot k_2 = 0$$

$$k_1 k_2 = -1$$

$$k_2 = -\frac{1}{k_1} = -\frac{1}{4}$$

$$\Downarrow$$

$$L_2: y = -\frac{1}{4}x + b$$

$$(3) M_1(-3; 4) \in L_2$$

$$4 = -\frac{1}{4} \cdot (-3) + b$$

$$b = \frac{13}{4} \Rightarrow L_2: y = -\frac{1}{4}x + \frac{13}{4}$$

$$(4) M = L \cap L_2$$

$$\begin{cases} 4x - y - 1 = 0 \\ y = -\frac{1}{4}x + \frac{13}{4} \end{cases}$$

$$\begin{cases} 4x - y - 1 = 0 \\ 4y = -x + 13 \end{cases}$$

$$\begin{cases} x = 13 - 4y \\ 4(13 - 4y) - y - 1 = 0 \end{cases}$$

$$\begin{cases} -17y = -51 \\ x = 13 - 4y \end{cases}$$

$$\begin{cases} y = 3 \\ x = 1 \end{cases} \Rightarrow M(1; 3)$$

$$(5) M_2(x_2; y_2) = ?$$

M — середина $M_1 M_2$

$$x_M = \frac{x_{M1} + x_{M2}}{2}$$

$$y_M = \frac{y_{M1} + y_{M2}}{2}$$

$$x_{M2} = 2M - x_{M1}$$

$$y_{M2} = 2y_M - y_{M1}$$

$$x_2 = 2 + 3 = 5$$

$$y_2 = 6 - 4 = 2$$

$$M_2(5; 2)$$

Ветки
формулы

$$D_3 \quad \begin{matrix} 4253 - 4256; 4263 - 66 \\ 4258 - 61 \end{matrix}$$

