

(28.05.20)

№ 4.2.52

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

$$\operatorname{tg} \varphi = \left| \frac{\frac{1}{2} - 2}{1 + 2 \cdot \frac{1}{2}} \right| = \left| \frac{-3/2}{1+1} \right| = \frac{3}{4} \quad \varphi = \operatorname{arctg} \frac{3}{4} \approx 37^\circ$$

2) $l_1: 2x - 3y + 10 = 0$ $l_2: 5x - y + 0 = 0$

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

$$\varphi = \operatorname{arctg} 1 = 45^\circ \left(\frac{\pi}{4} \right)$$

3) $l_1: y = \frac{2}{3}x - 2$ $l_2: 8x + 6y + 5 = 0$

$$6y = -8x - 5 \Rightarrow y = -\frac{4}{3}x - \frac{5}{6}$$

$$k_1 = \frac{3}{4} \quad k_2 = -\frac{4}{3}$$

$$\frac{3}{4} \cdot \left(-\frac{4}{3}\right) = -1 \Rightarrow l_1 \perp l_2 \Rightarrow \varphi = \frac{\pi}{2}$$

$$4) \quad l_1: y = 5x + 1 \quad l_2: y = 5x - 2$$

$$k_1 = 5 \quad k_2 = 5 \Rightarrow k_1 = k_2 \Rightarrow l_1 \parallel l_2 \Rightarrow \varphi = 0$$

$$\tan \varphi = \left| \frac{k_2 - k_1}{1 + k_1 k_2} \right| = \left| \frac{5 - 5}{1 + 25} \right| = \left| \frac{0}{26} \right| = 0$$

$$\sqrt{4 \cdot 2.57}$$

$$l_1: 3x - 2y + 5 = 0 \quad l_2: x + 2y - 9 = 0$$

$$l_3: 2x + y + 6 = 0$$

$$l_1 \cap l_2 = A \quad l_4 = ? \quad A \in l_4 \quad l_4 \parallel l_3$$

$$1) \quad A(x, y) = ?$$

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

$$\begin{cases} 3x - 9 - x + 5 = 0 \\ 2y = 9 - x \end{cases} \quad \begin{cases} 4x = 4 \\ 2y = 9 - x \end{cases} \quad \begin{cases} x = 1 \\ y = 4 \end{cases} \Rightarrow$$

$$\Rightarrow A(1, 4)$$

$$2) \quad l_4 \parallel l_3 \Leftrightarrow k_4 = k_3$$

$$1) \quad l_3: 2x + y + 6 = 0 \Rightarrow y = -2x - 6 \Rightarrow k_3 = -2$$

$$2) \quad \text{Maka } k_4 = -2$$

$$3) l_1: y = -2x + b$$

$AB \cap l_1 \Rightarrow$ logarithm

$$A(1;4) \quad l_1: 4 = -2 \cdot 1 + b \quad b = 6 \Rightarrow$$

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

4.2.62

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

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

$$1) l_2: l_2 \perp l, M_1 \in l_2$$

$$2) M_1 \quad l_2 \cap l = M$$

$$3) M_2: |M_1 M| = |M_2 M|$$

$$l_2 \perp l \Rightarrow A_1 A_2 - B_1 B_2 = 0$$

$$l: 4x - y - 1 = 0 \Rightarrow y = 4x - 1$$

$$l_2 \perp l \Rightarrow 1 + k_1 \cdot k_2 = 0 \Rightarrow k_1 k_2 = -1 \Rightarrow k_2 = -\frac{1}{4}$$

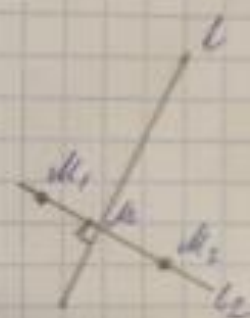
$$\text{Polar: } l_2: y = -\frac{1}{4}x + b$$

$$M_1 \in l_2 \Rightarrow 4 = -\frac{1}{4} \cdot (-3) + b \Rightarrow b = \frac{13}{4}$$

$$\text{Polar: } l_2: y = -\frac{1}{4}x + \frac{13}{4}$$

$$\begin{cases} 4x - y - 1 = 0 \\ y = -\frac{1}{4}x + \frac{13}{4} \end{cases} \quad \begin{cases} 4x - y - 1 = 0 \\ 4y = -x + 13 \end{cases} \quad \begin{cases} 4(13 - 4y) - y - 1 = 0 \\ 2 = 13 - 4y \end{cases} \Rightarrow$$

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



$$x_2 = 2 \cdot 1 - (-3) = 5$$

$$y_2 = 2 \cdot 3 - 4 = 2$$

Meraka $u_2(5, 2)$.