(14.05.20) Практика

№4.2.4.

$y = kx + 2$ $\quad d = \left|\frac{C}{\sqrt{A^2+B^2}}\right|$, если $l: Ax + By + C = 0$

$y = kx + 2 \Rightarrow kx - y + 2 = 0 \Rightarrow$

$\Rightarrow A = k,\ B = -1,\ C = 2$

$d = \left|\frac{2}{\sqrt{k^2+(-1)^2}}\right| = \left|\frac{2}{\sqrt{k^2+1}}\right| \Rightarrow \left|\frac{2}{\sqrt{k^2+1}}\right| = \sqrt{3}$

$\frac{2}{\sqrt{k^2+1}} = \sqrt{3} \Rightarrow k^2 = \frac{1}{3} \quad k = \pm\frac{1}{\sqrt{3}}$

№4.2.5.

l - ? $\quad l: A(-2; \frac{2}{5}) \in l,\ l \wedge Ox = \operatorname{arctg} 3$

1) $l: y = kx + b,\ k = \operatorname{tg}(l \wedge Ox) = \operatorname{tg}(\operatorname{arctg} 3) = 3 \Rightarrow$

$\Rightarrow l: y = 3x + b$

2) $A(-2; \frac{2}{5}) \in l \Rightarrow \frac{2}{5} = 3 \cdot (-2) + b \Rightarrow b = \frac{32}{5} = 6{,}4$

3) $y = 3x + \frac{32}{5}$

№4.2.6.

$l: 4x - 3y + 12 = 0$

1) $y = kx + b \Rightarrow y = \frac{4}{3}x + 4$

2) $\frac{x}{a} + \frac{y}{b} = 1 \Rightarrow 4x - 3y = -12 \mid :(-12) \Rightarrow$

$\Rightarrow \frac{4x}{-12} + \frac{3y}{12} = 1 \Rightarrow \frac{x}{-3} + \frac{y}{4} = 1$

3) $x\cos\alpha + y\sin\alpha - p = 0$

$R = \frac{1}{\pm\sqrt{A^2+B^2}} \quad R = \frac{1}{\pm\sqrt{25}} \quad R = \pm\frac{1}{5}$, т.к. $C = 12 \Rightarrow$

$\Rightarrow R = -\frac{1}{5}$

$4x - 3y + 12 = 0 \mid \cdot\left(-\frac{1}{5}\right) \Rightarrow -\frac{4}{5}x + \frac{3}{5}y - \frac{12}{5} = 0$

№4.2.7.

а) $2x - 3y + 6 = 0$

1) $y = \frac{2}{3}x + 2$

2) $2x - 3y = -6 \mid :(-6) \Rightarrow \frac{2x}{-6} + \frac{3y}{6} = 1 \Rightarrow \frac{x}{-3} + \frac{y}{2} = 1$

3) $R = \pm\frac{1}{\sqrt{13}} \Rightarrow R = -\frac{1}{\sqrt{13}} \Rightarrow -\frac{2}{\sqrt{13}}x + \frac{3}{\sqrt{13}}y - \frac{6}{\sqrt{13}} = 0$

ρ - перпендикуляр к l из точки O.

ρ - расстояние

$p = d = \frac{c}{\sqrt{A^2+B^2}}$

б) $x + 2,5 = 0$

1) $x = -2,5$

2) $\frac{x}{-2,5} = 1$

3) $\lambda = \frac{1}{\pm\sqrt{1}} \Rightarrow \lambda = -1 \Rightarrow -x - 2,5 = 0$

в) $y = x - 1$

1) $y = x - 1$.

2) $-x + y = -1 \quad | : -1 \Rightarrow \frac{x}{1} + \frac{y}{-1} = 1$

3) $\lambda = -\frac{1}{\sqrt{2}} \Rightarrow \frac{1}{\sqrt{2}}x - \frac{1}{\sqrt{2}}y - \frac{1}{\sqrt{2}} = 0$

г) $x - 5y = 0$

1) $5y = -x \Rightarrow y = -\frac{1}{5}x$

2) $\frac{x}{6} + \frac{y}{1} = 0$

3) $d = 0$, т.к. проходит через начало координат

№ 4.2.8.

а) l: $A(0, 2)$, $B(-3; 7) \in l$

$\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1} \quad \frac{y - 2}{7 - 2} = \frac{x - 0}{-3 - 0}$

$\frac{y - 2}{5} = \frac{x}{-3} \Rightarrow 5x + 3y - 6 = 0.$

б) l: $A(2; 1)$, $B(4, 1) \in l$

$\frac{y - 1}{1 - 1} = \frac{x - 2}{4 - 2} \Rightarrow y_1 = y_2 \Rightarrow l \parallel Ox$