09.04. 2022 VII одиница. Лекция

Зад 1

ΔABC

m. $A(2,-3)$

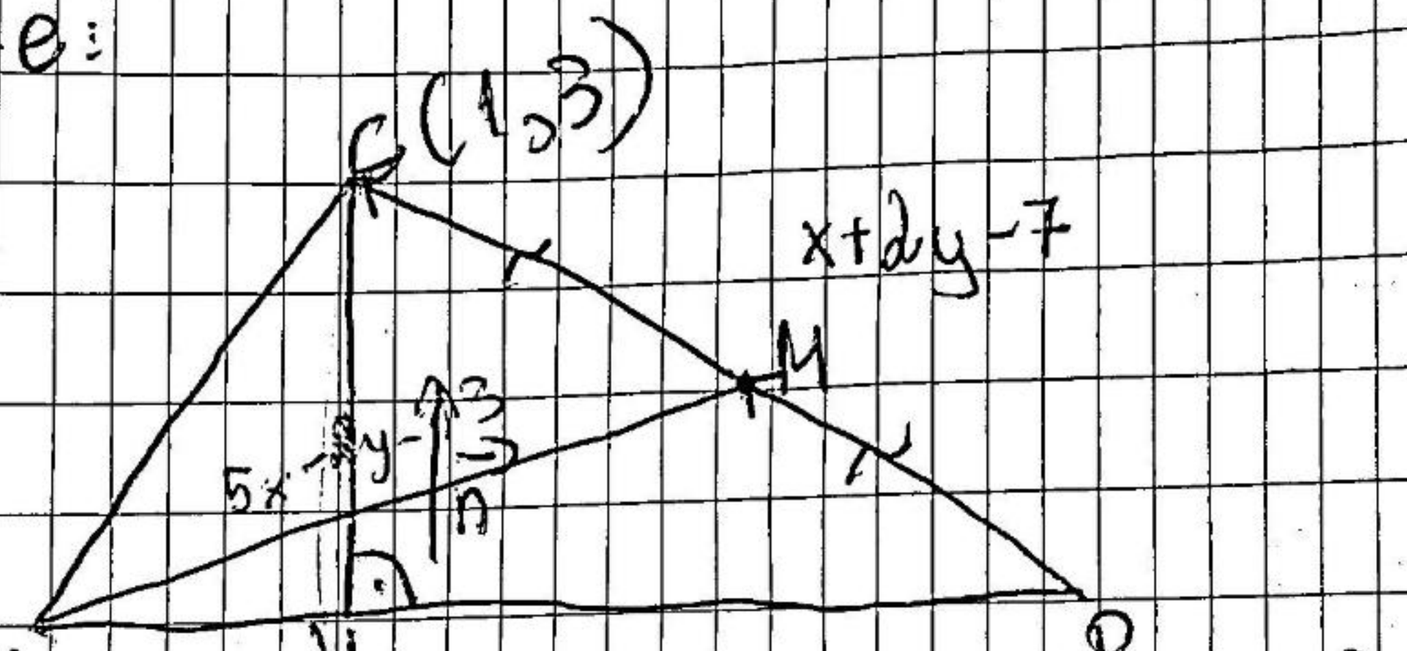
m. $B(5,1)$

$BC: x+2y-7=0$

$AM: 5x-2y-13=0$ - медиана

$q: hc = ?$

Ф-е:



$AB: \frac{x-2}{3} = \frac{y+3}{4}$

$4x-8 = 3y+9$

$4x-3y-17=0 \Rightarrow \vec{n}(4,-3)$

m M

$5x-2y-13 = x+2y-7$

$5x+2y-13=0$

$x+2y-7=0$

$x = 7-2y$

$5(7-2y)-2y-13=0$

$35-10y-2y-13=0$

$-12y = -22 \quad | \cdot (-1)$

$12y = 22$

$y = 2$ $\quad x = 7 - 4 = 3 \Rightarrow M(3, 2)$

$3 = \frac{x_c + 5}{2} \quad x_c = 1 \qquad 2 = \frac{y_c + 1}{2} \quad y_c = 3$

$m.C\left(\frac{2}{1}, 3\right)$

CH: $\begin{cases} \vec{z} \; C(1,3) \\ \vec{p} \; (4,-3) \end{cases}$ $\qquad$ CH $\frac{x-1}{4} = \frac{y-3}{3}$

$3x - 3 = -4y + 12$

$\boxed{3x + 4y - 15 = 0}$

Zad 2. $\alpha: 2x - 2y - z - 4 = 0$

a) koordinate na $m.A \in \alpha$

b) koordinate na enotski norm. v-r na α

a)

$y = 0, \quad z = 0$

$2x = 4$

$x = 2 \Rightarrow m.A(2, 0, 0)$

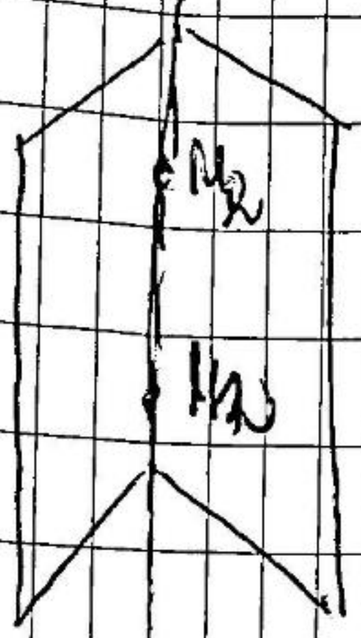
b)

$\vec{n_1}(2, -2, -1)$

enotski v-r $\quad \hat{n} = \frac{n}{|n|} = \pm\left(\frac{2}{3}, -\frac{2}{3}, -\frac{1}{3}\right)$

Zad 3.

α: $\begin{cases} z \\ A(0,0,2) \\ \perp Z \\ m - \text{presečnica na } \beta: x+y-z-2=0 \\ \quad\quad\quad\quad\quad\quad 2x-y+3z+1=0 \end{cases}$



$z=0$

$x+y-2=0$
$2x-y+1=0$
$2(2-y)-y+1=0$
$4-2y-y+1=0$
$-3y=-5$
$y=\frac{5}{3}$

$x=2-y$

$x=2-\frac{5}{3}=\frac{6}{3}-\frac{5}{3}=\frac{1}{3}$

$m.M_1\left(\frac{1}{3}, \frac{5}{3}, 0\right)$

$z=1$

$x+y-3=0$
$2x-y+4=0$
$2(3-y)-y+4=0$
$6-2y-y+4=0$
$-3y=-10$
$y=\frac{10}{3}$

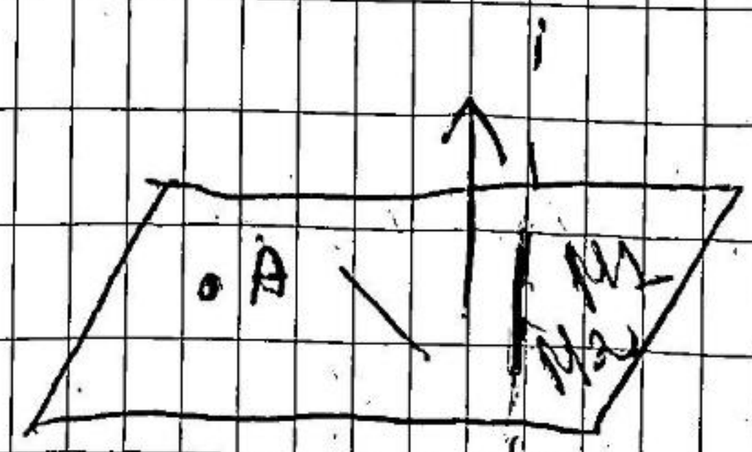
$x=3-y$

$x=\frac{9}{3}-\frac{10}{3}=\frac{1}{3}$

$m.M_2\left(\frac{1}{3}, \frac{10}{3}, 1\right)$

$\frac{x-\frac{1}{3}}{0}=\frac{y-\frac{5}{3}}{\frac{5}{3}}=\frac{z}{1}$

$\vec{p}\left(0, \frac{5}{3}, 1\right)$



2. $\begin{cases} z \in \Pi(0,0,2) \\ z \in M_1\left(\frac{1}{3}, \frac{5}{3}, 0\right) \\ z \in M_2\left(\frac{1}{3}, \frac{10}{3}, 1\right) \end{cases}$

$$\begin{vmatrix} x & y & z-2 \\ \frac{1}{3}-1 & \frac{5}{3}-5 & -2 \\ \frac{1}{3} & \frac{10}{3}-5 & -1 \end{vmatrix} = 0$$

$$\boxed{45x - 3y + 5z = 0}$$

Зад 4

I машина – 25% – 2% дефектни

II машина – 35% – 4% –II–

III машина – 40% – 5% –II–

а) ? Р произволно взет елемент от цялата да бъде дефектен

б) ако избраният е. е дефектна е вероятността той да е произведен от II машина ?

а) $P(A) = \frac{25}{100} \cdot \frac{2}{100} + \frac{35}{100} \cdot \frac{4}{100} + \frac{40}{100} \cdot \frac{5}{100}$

$P(A) = \frac{39}{10000} = \boxed{0,039}$

б) $P(H_2/A) = \frac{\frac{35}{100} \cdot \frac{4}{100}}{0,039} = \frac{\frac{140}{10000}}{0,039} = \frac{14}{39}$