

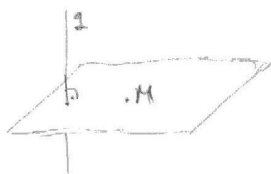
4.11) Odrediti jednačinu ravni koja sadrži tačku $M(-1, 0, 3)$ i normalna je na pravu

$$g: \frac{x+1}{2} = \frac{y-3}{4} = \frac{z-3}{-1}$$

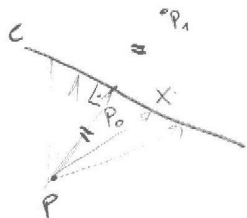
$$\vec{v}_g = (2, 4, -1) = \vec{n}_d$$

$$d: 2(x+1) + 4(y-0) - 1(z-3) = 0$$

$$d: 2x + 4y - z + 5 = 0$$



4.12) Odrediti tačku koja je simetrična tački $P(-1, -2, 1)$ u odnosu na pravu $e: \frac{x}{-2} = \frac{y-3}{4} = \frac{z-4}{1}$ kao i projekciju tačke P na pravu e .



$$e: \frac{x}{-2} = \frac{y-3}{4} = \frac{z-4}{1} = t$$

$$e: \begin{cases} x = -2t \\ y = 4t + 3 \\ z = t + 4 \end{cases}$$

$$X(x, y, z) \in e \Leftrightarrow X(-2t, 4t+3, t+4), t \in \mathbb{R}$$

$$P(-1, -2, 1)$$

$$\vec{PX} = [X] - [P] = (-2t+1, 4t+3+2, t+4-1) = (-2t+1, 4t+5, t+3)$$

$$P_0: \vec{PP}_0 \perp \vec{v}_e$$

$$\vec{PX} \cdot \vec{v}_e = 0$$

$$\Leftrightarrow (-2t+1, 4t+5, t+3) \cdot (-2, 4, 1) = 0$$

$$\Leftrightarrow 4t - 2 + 16t + 20 + t + 3 = 0$$

$$\Leftrightarrow 21t + 21 = 0$$

$$\Leftrightarrow t = -1$$

$$\Rightarrow X(2, -1, 3)$$

$$\Rightarrow P_0(2, -1, 3)$$

$$\frac{[P] + [P_1]}{2} = [P_0] \Rightarrow [P_1] = 2[P_0] - [P]$$

$$= 2(2, -1, 3) - (-1, -2, 1) = (5, 0, 5) \Rightarrow P_1(5, 0, 5)$$

4.13) Kroz tačku $T(-3, 1, 2)$ odrediti pravu e koja je paralelna ravni $d: 4x - y + 2z - 5 = 0$ i koja sece pravu $p: \frac{x+3}{0} = \frac{y-2}{2} = \frac{z+1}{-1}$

$$T(-3, 1, 2) \in e$$

$$e \parallel d: 4x - y + 2z - 5 = 0$$

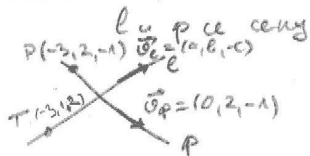
$$e \cap p \neq \emptyset \quad p: \frac{x+3}{0} = \frac{y-2}{2} = \frac{z+1}{-1}$$

$$\vec{v}_e = (a, b, c)$$

$$e \parallel d \Rightarrow \vec{v}_e \perp \vec{n}_d = (4, -1, 2) \Rightarrow (a, b, c) \cdot (4, -1, 2) = 0$$

$$4a - b + 2c = 0$$

$e?$



$$[T\vec{P}, \vec{v}_e, \vec{v}_p] = 0$$

$$\begin{vmatrix} 0 & 1 & -3 \\ a & b & c \\ 0 & 2 & -1 \end{vmatrix} = 0$$

$$\Leftrightarrow -5a = 0 \Rightarrow a = 0$$

$$-b + 2c = 0 \Rightarrow b = 2c$$

$$\vec{v}_e = (0, 2c, c) = c(0, 2, 1)$$

$$\Rightarrow e: \frac{x+3}{0} = \frac{y-1}{2} = \frac{z-2}{1}$$