

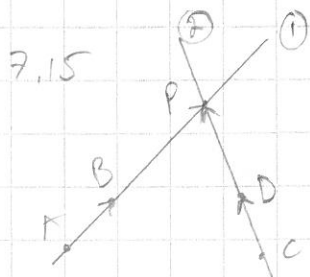
$$1^\circ \text{ jö } 2^\circ \Rightarrow \text{suorat leikkavat} \Leftrightarrow \begin{cases} 2+3t = 2r & (1) \\ -1 = -13+8r & (2) \\ 8-15t = 3 & (3) \end{cases}$$

$$(2) \text{ jö } (3) \Rightarrow r = \frac{12}{8} = \frac{3}{2}$$

$$t = \frac{5}{15} = \frac{1}{3}$$

$$\text{Jark. (1):een: } 2+3 \cdot \frac{1}{3} = 2 \cdot \frac{3}{2} \Leftrightarrow 2+1 = 3 \quad \checkmark$$

$$\Rightarrow \text{leikkauspiste} : P = (2+3 \cdot \frac{1}{3}, -1, 8-15 \cdot \frac{1}{3}) = (3, -1, 3)$$



$$1^\circ P \text{ on suoralla 1} \Leftrightarrow \overline{AP} \parallel \overline{AB} \Leftrightarrow \overline{AP} = t \overline{AB} = t(2\vec{i} - \vec{j} + 3\vec{k}) = 2t\vec{i} - t\vec{j} + 3t\vec{k}$$

$$\Rightarrow P = (3+2t, 5-t, -2+3t)$$

$$2^\circ P \text{ on suoralla 2} \Leftrightarrow \overline{CP} \parallel \overline{CD} \Leftrightarrow \overline{CP} = r \overline{CD} = r(6\vec{j} + 2\vec{k}) = 6r\vec{j} + 2r\vec{k}$$

$$A = (3, 5, -2) \quad C = (3, -1, 6)$$

$$\Rightarrow P = (3, -1+6r, 6+2r)$$

$$B = (5, 4, 1) \quad D = (3, 5, 8)$$

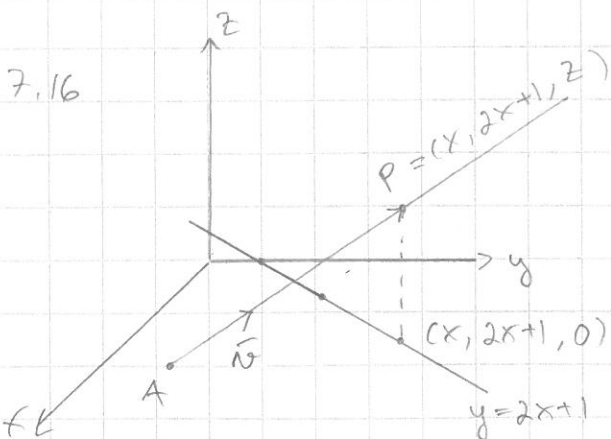
$$1^\circ \text{ jö } 2^\circ \Rightarrow \text{suorat leikkavat} \Leftrightarrow \begin{cases} 3+2t = 3 & (1) \\ 5-t = -1+6r & (2) \\ -2+3t = 6+2r & (3) \end{cases}$$

$$(1) \text{ jö } (2) : \begin{cases} 3+2t = 3 & \Leftrightarrow t = 0 \\ 5-t = -1+6r & \leftarrow \text{ij. } 5-3 = -1+6r \Leftrightarrow r = \frac{1}{2} \end{cases}$$

$$\text{Jark. (3):een: } -2+3 \cdot 0 = 6+2 \cdot \frac{1}{2} \Leftrightarrow -2 = 7 \quad \checkmark$$

$$\Rightarrow \text{suorat leikkavat (piste} P = (3+2 \cdot 0, -1+6 \cdot \frac{1}{2}, 6+2 \cdot \frac{1}{2}) = (3, 2, 7) \text{)}$$

$$\overline{AB} \cdot \overline{CD} = 2 \cdot 0 + (-1) \cdot 6 + 3 \cdot 2 = 0 \Rightarrow \overline{AB} \perp \overline{CD} \Rightarrow \text{leikkaavat 90°-suorasti}$$



$$A = (3, 1, 0) \quad \vec{n} = -\vec{i} + 3\vec{j} + \vec{k}$$

P on suoravertillä

$$\Leftrightarrow \overline{AP} \parallel \vec{n} \Leftrightarrow \overline{AP} = t \vec{n} = t(-\vec{i} + 3\vec{j} + \vec{k}) = -t\vec{i} + 3t\vec{j} + t\vec{k}, t \geq 0$$

$$\Rightarrow P = (3-t, 1+3t, 0+t)$$

$$\Rightarrow \begin{cases} x = 3-t & (1) \\ 2x+1 = 1+3t & (2) \\ z = t & (3) \end{cases}$$

$$(1) \text{ jö } (2) \begin{cases} x = 3-t & | \cdot (-2) \\ 2x+1 = 1+3t & \end{cases}$$

$$1 = -5+5t \Leftrightarrow t = \frac{6}{5}$$

$$\Rightarrow P = (3 - \frac{6}{5}, 1 + 3 \cdot \frac{6}{5}, \frac{6}{5}) = (\frac{9}{5}, \frac{23}{5}, \frac{6}{5})$$