

Nr. 3) a) $g: \vec{x} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} + t \begin{pmatrix} 3-1 \\ 3-2 \\ 5-3 \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} + t \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix}; v = \sqrt{2^2 + 1^2 + 2^2} \frac{km}{h} = \underline{\underline{3 \frac{km}{h}}}$

$\vec{OP}_2 = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} + 2 \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix} = \begin{pmatrix} 5 \\ 4 \\ 7 \end{pmatrix}; \underline{\underline{P_2(5|4|7)}}$

b) $g: \vec{x} = \begin{pmatrix} 2 \\ 4 \\ 1 \end{pmatrix} + t \cdot \frac{1}{2} \begin{pmatrix} 4-2 \\ 7-4 \\ 7-1 \end{pmatrix} = \begin{pmatrix} 2 \\ 4 \\ 1 \end{pmatrix} + t \begin{pmatrix} 1 \\ 1,5 \\ 3 \end{pmatrix}; v = \sqrt{1^2 + 1,5^2 + 3^2} \frac{km}{h}$

$\vec{OP}_2 = \begin{pmatrix} 2 \\ 4 \\ 1 \end{pmatrix} + 2 \begin{pmatrix} 1 \\ 1,5 \\ 3 \end{pmatrix} = \begin{pmatrix} 4 \\ 7 \\ 7 \end{pmatrix}; \underline{\underline{P_2(4|7|7)}}$ $v = \underline{\underline{3,5 \frac{km}{h}}}$

c) $g: \vec{x} = \begin{pmatrix} 5 \\ 2 \\ 1 \end{pmatrix} + t \cdot \frac{1}{4} \begin{pmatrix} 9-5 \\ 22-2 \\ 6-1 \end{pmatrix} = \begin{pmatrix} 5 \\ 2 \\ 1 \end{pmatrix} + t \begin{pmatrix} 1 \\ 5 \\ 1,25 \end{pmatrix}; v = \sqrt{1^2 + 5^2 + 1,25^2} \frac{km}{h}$

$\vec{OP}_2 = \begin{pmatrix} 5 \\ 2 \\ 1 \end{pmatrix} + 2 \begin{pmatrix} 1 \\ 5 \\ 1,25 \end{pmatrix} = \begin{pmatrix} 7 \\ 12 \\ 3,5 \end{pmatrix}; \underline{\underline{P_2(7|12|3,5)}}$ $v = \underline{\underline{5,25 \frac{km}{h}}}$

d) $g: \vec{x} = \begin{pmatrix} 2 \\ 5 \\ 6 \end{pmatrix} + t \cdot \frac{1}{3} \begin{pmatrix} 13-2 \\ 15-5 \\ 8-6 \end{pmatrix} = \begin{pmatrix} 2 \\ 5 \\ 6 \end{pmatrix} + t \begin{pmatrix} 11 \\ 10 \\ 2 \\ 3 \end{pmatrix}$

$v = \frac{1}{3} \cdot \sqrt{11^2 + 10^2 + 2^2} \frac{km}{h} = \frac{1}{3} \cdot 15 \frac{km}{h} = \underline{\underline{5 \frac{km}{h}}}$

$\vec{OP}_2 = \begin{pmatrix} 2 \\ 5 \\ 6 \end{pmatrix} + \frac{2}{3} \begin{pmatrix} 11 \\ 10 \\ 2 \end{pmatrix} = \begin{pmatrix} 2 \\ 5 \\ 6 \end{pmatrix} + \begin{pmatrix} \frac{22}{3} \\ \frac{20}{3} \\ \frac{4}{3} \end{pmatrix} = \begin{pmatrix} \frac{28}{3} \\ \frac{35}{3} \\ \frac{22}{3} \end{pmatrix}; \underline{\underline{P_2(\frac{28}{3}|\frac{35}{3}|\frac{22}{3})}}$

