

S 245 Nr. 10       $A(2|1|1|2)$        $B(4|3|1|3)$

$$a) \quad g(A; B): \quad \vec{x} = \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix} + t \begin{pmatrix} 4-2 \\ 3-1 \\ 3-2 \end{pmatrix} = \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix} + t \begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix}$$

$$\vec{u} = \begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix} \Rightarrow \underline{\underline{\vec{u}_0}} = \frac{1}{\sqrt{2^2+2^2+1^2}} \begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix} = \frac{1}{3} \begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix}$$

$$g^*(A; B): \quad \underline{\underline{\vec{x}}} = \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix} + r \begin{pmatrix} \frac{2}{3} \\ \frac{2}{3} \\ \frac{1}{3} \end{pmatrix}$$

$P_1$  und  $P_2$  Abstand 12 von A

$$\Rightarrow \vec{OP}_1 = \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix} + 12 \begin{pmatrix} \frac{2}{3} \\ \frac{2}{3} \\ \frac{1}{3} \end{pmatrix} = \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix} + \begin{pmatrix} 8 \\ 8 \\ 4 \end{pmatrix} = \begin{pmatrix} 10 \\ 9 \\ 6 \end{pmatrix} \Rightarrow \underline{\underline{P_1(10|9|6)}}$$

$$\vec{OP}_2 = \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix} - 12 \begin{pmatrix} \frac{2}{3} \\ \frac{2}{3} \\ \frac{1}{3} \end{pmatrix} = \begin{pmatrix} 2 \\ 1 \\ 2 \end{pmatrix} + \begin{pmatrix} -8 \\ -8 \\ -4 \end{pmatrix} = \begin{pmatrix} -6 \\ -7 \\ -2 \end{pmatrix} \Rightarrow \underline{\underline{P_2(-6|-7|-2)}}$$

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$$b) \quad P_1\left(10\frac{2}{3} \mid 9\frac{2}{3} \mid 6\frac{1}{3}\right) ; \quad P_2\left(-6\frac{2}{3} \mid -7\frac{2}{3} \mid -2\frac{1}{3}\right) \quad \begin{array}{l} \text{für } r=13 \\ \text{und } r=-13 \end{array}$$

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c) für  $r=14$  und  $r=-14$

$$P_1\left(11\frac{1}{3} \mid 10\frac{1}{3} \mid 6\frac{2}{3}\right) ; \quad P_2\left(-7\frac{1}{3} \mid -8\frac{1}{3} \mid -2\frac{2}{3}\right)$$

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d) für  $r=15$  und  $r=-15$

$$P_1(12 \mid 11 \mid 7) ; \quad P_2(-8 \mid -9 \mid -3)$$