



$$\eta_1 \cap d = \{Z_2\} \quad | \quad \eta_1 \cap d:$$

$$10 + t + t + 8 + t = 12$$

$$18 + 3t = 12 \quad | - 18$$

$$3t = -6 \quad | : 3$$

$$\leftarrow \underline{\underline{t = -2}}$$

$$\boxed{Z_2(8|2|6)}$$

$$z.z.: \quad \left| \vec{Z_1 A} \right| = \left| \vec{Z_1 M_2} \right| = \left| \vec{Z_2 B} \right| = \left| \vec{Z_2 M_1} \right|$$

$$\left| \vec{Z_1 A} \right| = \left| \begin{pmatrix} -4 \\ -6 \\ 2 \end{pmatrix} \right| = \sqrt{56}$$

$$\left| \vec{Z_1 M_2} \right| = \left| \begin{pmatrix} 2 \\ 6 \\ 4 \end{pmatrix} \right| = \sqrt{56}$$

$$\left| \vec{Z_2 B} \right| = \left| \begin{pmatrix} 4 \\ -2 \\ -6 \end{pmatrix} \right| = \sqrt{56}$$

$$\left| \vec{Z_2 M_1} \right| = \left| \begin{pmatrix} -2 \\ 4 \\ 6 \end{pmatrix} \right| = \sqrt{56}$$

$$A(0|0|10)$$

$$P(-2|-2|0)$$

$$Q(9|4|1)$$

w.z.z.w. ✓

φ ... Drehwinkel | α ... \sphericalangle PAQ

$$\cos \varphi = \frac{\begin{pmatrix} 4 \\ -2 \\ -6 \end{pmatrix} \cdot \begin{pmatrix} -2 \\ 4 \\ 6 \end{pmatrix}}{\left| \begin{pmatrix} 4 \\ -2 \\ -6 \end{pmatrix} \right| \cdot \left| \begin{pmatrix} -2 \\ 4 \\ 6 \end{pmatrix} \right|} =$$

$$= \frac{-52}{\sqrt{56} \cdot \sqrt{56}} = -\frac{52}{56} = -\frac{26}{28}$$

$$z.z.: \quad \varphi = \alpha$$

$$\vec{AQ} = \begin{pmatrix} 9 \\ 4 \\ 1 \end{pmatrix} \quad | \quad \vec{AP} = \begin{pmatrix} -2 \\ -2 \\ 0 \end{pmatrix}$$

$$\cos \alpha = \frac{\begin{pmatrix} 9 \\ 4 \\ 1 \end{pmatrix} \cdot \begin{pmatrix} -2 \\ -2 \\ 0 \end{pmatrix}}{\left| \begin{pmatrix} 9 \\ 4 \\ 1 \end{pmatrix} \right| \cdot \left| \begin{pmatrix} -2 \\ -2 \\ 0 \end{pmatrix} \right|} =$$

$$= \frac{-26}{\sqrt{98} \cdot \sqrt{8}} = -\frac{26}{28}$$

w.z.z.w. ✓