

VH 26. 11. 2021

$$\begin{array}{r} 28/2.46a \\ 2.48 \text{ body} \\ 2.49 \\ 2.50a \\ 29/2.53a \end{array}$$

$$\begin{array}{l} 2.46 \\ a) \begin{array}{l} A \begin{bmatrix} 1, 3, -1 \end{bmatrix} \\ B \begin{bmatrix} 2, 3, 3 \end{bmatrix} \\ C \begin{bmatrix} -2, -5, 7 \end{bmatrix} \end{array} \\ \vec{w}_1 = A - B = A - B = \begin{bmatrix} 1, 0, 4 \end{bmatrix} \\ \vec{w}_2 = A - C = A - C = \begin{bmatrix} 3, 8, -6 \end{bmatrix} \\ \sigma(A, \vec{w}_1, \vec{w}_2): \begin{array}{l} x = 1 + 1k - 3l \\ y = 3 + 0k - 8l \\ z = -1 + 4k - 6l \end{array} \end{array}$$

$k, l \in \mathbb{R}$

$$\begin{array}{l} 28/2.47 \\ A \begin{bmatrix} 1, 0, 3 \end{bmatrix}, B \begin{bmatrix} -2, 3, 0 \end{bmatrix}, C \begin{bmatrix} -3, 2, 4 \end{bmatrix} \\ \vec{w}_1 = A - B = \begin{bmatrix} 3, -3, 3 \end{bmatrix} \\ \vec{w}_2 = A - C = \begin{bmatrix} 4, -2, 1 \end{bmatrix} \\ \sigma(A, \vec{w}_1, \vec{w}_2): \begin{array}{l} x = 1 - 3k - 4l \\ y = 0 + 3k - 2l \\ z = 3 - 3k + 1l \end{array} \end{array}$$

$k, l \in \mathbb{R}$

$$\begin{array}{l} \vec{p} = 1 - 3k - 4l \\ \vec{q} = 0 + 3k - 2l \\ \vec{r} = 3 - 3k + 1l \end{array} \quad \text{III:}$$

$$\begin{array}{r} -1 = -3k - 4l \\ 1 = 3k - 2l \\ 0 = -6l \end{array} \quad \begin{array}{l} 1 = 3k - 2 \cdot 0 \\ k = \frac{1}{3} \end{array}$$

$$\begin{array}{l} l = 0 \\ 2 = 3 - 3 \cdot \frac{1}{3} + 0 \\ 2 = 2 \quad \checkmark \end{array} \quad L \subset \sigma$$

2.48

$$\mathcal{P}: \begin{aligned} x &= 2 - t + \lambda \\ y &= -1 + t - 2\lambda \\ z &= 3 + 2t - \lambda \end{aligned} \quad t, \lambda \in \mathbb{R}$$

$$A[1, 2, 3] \in \mathcal{P}$$

$$\begin{aligned} 1 &= 2 - t + \lambda \\ 2 &= -1 + t - 2\lambda \\ 3 &= 3 + 2t - \lambda \end{aligned}$$

$$\begin{aligned} 3 &= 3 + 2t - \lambda \\ 3 &= 3 \end{aligned}$$

$$1 = 2 - t + \lambda$$

$$2 = -1 + t - 2\lambda$$

$$-1 = -t + \lambda$$

$$3 = t - 2\lambda$$

$$-2 = \lambda$$

$$\lambda = -2$$

$$-1 = -t - 2$$

$$1 = -t$$

$$t = -1$$

$$A \in \mathcal{P}$$

2.49

$$\mathcal{L}: x = 1 + 4\lambda - 2\lambda \Rightarrow x = 1 + 4 \cdot 3 - 2 \cdot 6 = 1$$

$$y = -3\lambda + \lambda$$

$$z = -2 + 6\lambda - \lambda \quad \lambda, \lambda \in \mathbb{R}$$

$$A[x_1, -3, 7] \in \mathcal{L} \Rightarrow A[1, -3, 7]$$

$$-3 = -3\lambda + \lambda \Rightarrow -3 = -3 \cdot 3 + \lambda$$

$$7 = -2 + 6\lambda - \lambda \quad \lambda = 6$$

$$-3 = -3\lambda + \lambda$$

$$-4 = -2\lambda - \lambda$$

$$6 = 2\lambda \Rightarrow \lambda = 3$$

2.50

$\rightarrow [-1, 2, -1]$
 $\vec{w} \cdot \vec{v} = 0$
 $\vec{v} = [2, 3, 0]$
 $\vec{v} \cdot \vec{v} = 13$
 $\vec{v} = \frac{1}{\sqrt{13}} [2, 3, 0]$
 $\vec{w} = \vec{w} - \vec{v} \cdot \vec{w} \vec{v} = [1, -1, -1]$
 $\vec{w} = [1, -1, -1]$

$P: x = 2 - t$
 $y = 3 + 2t$
 $z = -t \quad t \in \mathbb{R}$

α

$\alpha: x = 2 - t + s$
 $y = 3 + 2t - s$
 $z = 0 - t - s \quad t, s \in \mathbb{R}$