

$$5.4.3 \quad \bar{u} = (2, -1, -1) = e \begin{pmatrix} 2 \\ -1 \\ -1 \end{pmatrix}, \quad \bar{v} = (2, 1, 1)$$

$$\bar{w} = (x_1, x_2, x_3)$$

Som linj.komb. av

$$\bar{e} = (1, 0, 1), \quad \bar{f} = (1, 0, -1), \quad \bar{g} = (0, 1, 1)$$

Lösning:  $t_1 \bar{e} + t_2 \bar{f} + t_3 \bar{g} = \bar{u}$

$$t_1 \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} + t_2 \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix} + t_3 \begin{pmatrix} 0 \\ 1 \\ 1 \end{pmatrix} = \begin{pmatrix} 2 \\ -1 \\ -1 \end{pmatrix}$$

$$\Leftrightarrow \left( \begin{array}{ccc|cc} 1 & 1 & 0 & 2 & x_1 \\ 0 & 0 & 1 & -1 & x_2 \\ 1 & 1 & 1 & -1 & x_3 \end{array} \right)$$

$$\Leftrightarrow \left( \begin{array}{ccc|cc} 1 & 1 & 0 & 2 & x_1 \\ 0 & 0 & 1 & -1 & x_2 \\ 0 & -2 & 1 & -3 & x_3 - x_1 \end{array} \right)$$

$$\begin{cases} t_1 + t_2 = 2 \\ t_3 = -1 \\ -2t_2 + t_3 = -3 \end{cases} \quad \begin{cases} t_1 = 1 \\ t_2 = 1 \\ t_3 = -1 \end{cases}$$

$$1 \cdot \bar{e} + 1 \cdot \bar{f} + (-1) \bar{g} = \bar{u}$$

$$\text{Koll. } (1, 0, 1) + (1, 0, -1) - (0, 1, 1) \\ = (2, -1, -1) = \bar{u}$$