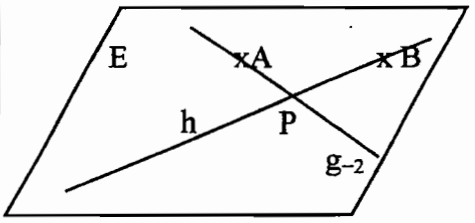
Nr.	Lösungshinweise zu B II	BE
1.1	$\begin{pmatrix} 0{,}1 & 0{,}2 & 0{,}3 \\ 0{,}05 & 0{,}1 & 0{,}1 \\ 0{,}05 & 0{,}1 & 0{,}04 \end{pmatrix}\begin{pmatrix} 100 \\ 60 \\ 50 \end{pmatrix} = \begin{pmatrix} 10+12+15 \\ 5+6+5 \\ 5+6+2 \end{pmatrix}$ | | B | M | S | $\vec{y}$ | $\vec{x}$ | | B | 10 | 12 | 15 | 63 | 100 | | M | 5 | 6 | 5 | 44 | 60 | | S | 5 | 6 | 2 | 37 | 50 |	4
1.2	$\left(\begin{array}{ccc\|c} 0{,}9 & -0{,}2 & -0{,}3 & 67{,}8 \\ -0{,}05 & 0{,}9 & -0{,}1 & 40{,}4 \\ -0{,}05 & -0{,}1 & 0{,}96 & 0 \end{array}\right) \sim \left(\begin{array}{ccc\|c} 0 & 16 & -2{,}1 & 795 \\ 0 & 1 & -1{,}06 & 40{,}4 \end{array}\right) \sim \left(\begin{array}{ccc\|c} & & & \\ 0 & 0 & 14{,}86 & 148{,}6 \end{array}\right)$ $\Rightarrow \vec{x} = \begin{pmatrix} 90 \\ 51 \\ 10 \end{pmatrix}$ B produziert 90 ME, M produziert 51 ME, S produziert 10 ME.	5
1.3	$\vec{y}(t) = \begin{pmatrix} 0{,}9 & -0{,}2 & -0{,}3 \\ -0{,}05 & 0{,}9 & -0{,}1 \\ -0{,}05 & -0{,}1 & 0{,}96 \end{pmatrix}\begin{pmatrix} 100-t \\ 60-2t \\ 50 \end{pmatrix} = \begin{pmatrix} 63-0{,}5t \\ 44-1{,}75t \\ 37+0{,}25t \end{pmatrix}$ $\left.\begin{array}{l} 63-0{,}5t \geq 0 \Rightarrow t \leq 126;\ 44-1{,}75t \geq 0 \Rightarrow t \leq \frac{176}{7} \approx 25{,}1 \\ 60-2t \geq 0 \Rightarrow t \leq 30 \end{array}\right\} \Rightarrow t \in [0;\ \frac{176}{7}]$ s(t)=−2t+144 fallende Gerade, also maximal für t = 0, s(0) = 144	8
2.1	$\forall a \in \mathbb{R}$ g_a echt parallel x_1x_2-Ebene, für a=0 echt parallel zur x_2-Achse.	3
2.2	RV sind lin. unabhängig $\Rightarrow g_a$ nicht parallel h $\forall a \in \mathbb{R}$ $\left.\begin{array}{lll} \text{I:} & 1+ar = 1+2s & \\ \text{II:} & r = 1 & \Rightarrow r = 1 \\ \text{III:} & 1 = -s & \Rightarrow s = -1 \end{array}\right\} \begin{array}{l} \Rightarrow a = -2:\ g_{-2} \text{ schneidet h in } P(-1\|1\|1) \\ \Rightarrow a \neq -2:\ g_a \text{ windschief h} \end{array}$	6
2.3.1	$E: \vec{x} = \begin{pmatrix} 1 \\ 0 \\ 1 \end{pmatrix} + r \cdot \begin{pmatrix} -2 \\ 1 \\ 0 \end{pmatrix} + s \cdot \begin{pmatrix} 0 \\ 1 \\ -1 \end{pmatrix}$ $\left(\begin{array}{cc\|c} -2 & 0 & x_1-1 \\ 1 & 1 & x_2 \\ 0 & -1 & x_3-1 \end{array}\right) \sim \left(\begin{array}{cc\|c} 0 & 2 & x_1+2x_2-1 \\ 0 & -1 & x_3-1 \end{array}\right) \sim \left(\begin{array}{cc\|c} & & \\ 0 & 0 & x_1+2x_2+2x_3-3 \end{array}\right)$ $E: x_1 + 2x_2 + 2x_3 - 3 = 0$	5
2.3.2	h in E: $1+2s+2-2s-3 = 0 \Rightarrow 0 = 0 \Rightarrow$ h liegt in E	2
2.3.3 2.4	 $\overrightarrow{OD} = \overrightarrow{OC} + \overrightarrow{BA} = \begin{pmatrix} 3 \\ 0 \\ 0 \end{pmatrix} + \begin{pmatrix} 0 \\ -1 \\ 1 \end{pmatrix} = \begin{pmatrix} 3 \\ -1 \\ 1 \end{pmatrix}$ D(3| −1| 1) C in E: $3+2\cdot 0+2\cdot 0-3=0 \Rightarrow$ Beh.	3 4
	Summe	40