LINAG Ü8

3.3.2. α) $\begin{pmatrix}1\\2\\3\end{pmatrix}\mapsto\begin{pmatrix}3\\2\\1\end{pmatrix}$ $\begin{pmatrix}2\\3\\4\end{pmatrix}\mapsto\begin{pmatrix}5\\3\\1\end{pmatrix}$ $\begin{pmatrix}2\\4\\5\end{pmatrix}\mapsto\begin{pmatrix}3\\2\\2\end{pmatrix}$

$$
\left(\begin{array}{ccc}1&2&2\\2&3&4\\3&4&5\\3&5&3\\2&3&2\\1&1&2\end{array}\right)\rightsquigarrow
\overset{\substack{-\mathrm{I}\ -\mathrm{I}}}{\left(\begin{array}{ccc}1&1&1\\2&1&2\\3&1&2\\3&2&0\\2&1&0\\1&0&1\end{array}\right)}\rightsquigarrow
\overset{\substack{-\mathrm{III}\quad-\mathrm{II}}}{\left(\begin{array}{ccc}0&1&0\\0&1&1\\1&1&1\\3&2&-2\\2&1&-1\\0&0&1\end{array}\right)}\rightsquigarrow
\overset{\substack{-\mathrm{III}\ -\mathrm{I}}}{\left(\begin{array}{ccc}0&1&0\\0&0&1\\1&0&0\\3&4&-5\\2&2&-3\\0&-1&1\end{array}\right)}\rightsquigarrow
\overset{\substack{\mathrm{II}\ \mathrm{III}\ \mathrm{I}}}{\left(\begin{array}{ccc}1&0&0\\0&1&0\\0&0&1\\4&-5&3\\2&-3&2\\-1&1&0\end{array}\right)}
$$

$$\Rightarrow A=\begin{pmatrix}4&-5&3\\2&-3&2\\-1&1&0\end{pmatrix}$$

β) $\begin{pmatrix}1\\2\\3\end{pmatrix}\mapsto\begin{pmatrix}2\\1\\2\end{pmatrix}$ $\begin{pmatrix}2\\3\\4\end{pmatrix}\mapsto\begin{pmatrix}3\\0\\0\end{pmatrix}$ $\begin{pmatrix}2\\4\\5\end{pmatrix}\mapsto\begin{pmatrix}1\\0\\0\end{pmatrix}$

$$
\left(\begin{array}{ccc}1&2&2\\2&3&4\\3&4&5\\2&3&1\\1&0&0\\2&0&0\end{array}\right)\rightarrow
\overset{\substack{-\mathrm{I}\ -\mathrm{II}}}{\left(\begin{array}{ccc}1&1&0\\2&1&1\\3&1&1\\2&1&-2\\1&-1&0\\2&-2&0\end{array}\right)\rightsquigarrow}
\overset{\substack{-3\cdot\mathrm{III}\ -\mathrm{III}}}{\left(\begin{array}{ccc}1&1&0\\-1&0&1\\0&0&1\\8&3&-2\\1&-1&0\\2&-2&0\end{array}\right)}\rightsquigarrow
\overset{\substack{-\mathrm{II}}}{\left(\begin{array}{ccc}0&1&0\\-1&0&1\\0&0&1\\5&3&-2\\2&-1&0\\4&-2&0\end{array}\right)}\rightsquigarrow
\overset{\substack{\cdot(-1)\quad+\mathrm{I}}}{\left(\begin{array}{ccc}0&1&0\\1&0&0\\0&0&1\\-5&3&3\\-2&-1&2\\-4&-2&4\end{array}\right)}\rightsquigarrow
\overset{\substack{\mathrm{II}\ \mathrm{I}\ \mathrm{III}}}{\left(\begin{array}{ccc}1&0&0\\0&1&0\\0&0&1\\3&-5&3\\-1&-2&2\\-2&-4&4\end{array}\right)}
$$

$$\Rightarrow A=\begin{pmatrix}3&-5&3\\-1&-2&2\\-2&-4&4\end{pmatrix}$$