1

$$\frac{2}{\left(3+\frac{1}{5}\right)}+\frac{\frac{\left(3+\frac{1}{4}\right)}{13}}{\frac{2}{3}}+\left(\left(2+\frac{5}{18}\right)-\frac{17}{36}\right)\cdot 18.6=34.583$$

2

$$\left(2\cdot x^{3}+x^{2}\cdot y+2\ yx^{2}-y^{3}\right)\ (x+5\ y)-\left(x^{3}-2\ x^{2}\ \ y+3\ xy^{2}+5\ y^{3}\right)\ (2\ x-y)\xrightarrow{expand}16\cdot x^{3}\cdot y+3\cdot x^{2}\cdot y^{2}-11\cdot x\cdot y^{3}-6\cdot x\cdot xy^{2}+$$

3

$$x^{3}+9\ x^{2}+23\ x+15\xrightarrow{factor}(x+3)\cdot(x+5)\cdot(x+1)$$

$$x^{3}+9\ x^{2}+23\ x+15\xrightarrow{solve}\begin{bmatrix}-1\\-3\\-5\end{bmatrix}$$

4

$$a:=\begin{bmatrix}4\\-1\\0\end{bmatrix}\qquad A:=-2$$

$$b:=\begin{bmatrix}3\\-3\\4\end{bmatrix}\qquad B:=4$$

$$c:=\begin{bmatrix}5\\2\\-1\end{bmatrix}\qquad C:=2$$

$$B\cdot a=\begin{bmatrix}16\\-4\\0\end{bmatrix}\qquad B\cdot a-A\cdot b+C\cdot c=\begin{bmatrix}32\\-6\\6\end{bmatrix}\qquad a\times b=\begin{bmatrix}-4\\-16\\-9\end{bmatrix}\qquad a\cdot b=15$$

5

$$A:=\begin{bmatrix}1 & 1 & 5\\ 3 & 2 & 7\\ 7 & -1 & 0\end{bmatrix}\quad B:=\begin{bmatrix}5\\ 0\\ 4\end{bmatrix}\quad C:=\begin{bmatrix}6 & 2 & 2\\ -1 & 4 & 7\\ 3 & 1 & 1\end{bmatrix}$$

$$\det(A)=-29\quad \det(C)=0$$

$$B^{T}=\begin{bmatrix}5 & 0 & 4\end{bmatrix}$$

$$A^{-1}=\begin{bmatrix}-0.241 & 0.172 & 0.103\\ -1.69 & 1.207 & -0.276\\ 0.586 & -0.276 & 0.034\end{bmatrix}$$

$$\operatorname{rank}(A)=3\quad \operatorname{rank}(C)=2$$

$$A\cdot B=\begin{bmatrix}25\\ 43\\ 35\end{bmatrix}\quad A^{2}=\begin{bmatrix}39 & -2 & 12\\ 58 & 0 & 29\\ 4 & 5 & 28\end{bmatrix}$$

6

$$A:=\begin{bmatrix}6 & 1 & 5 & 3\\ 1 & 2 & 1 & -1\\ 2 & 4 & -1 & 2\\ 7 & -1 & 2 & 1\end{bmatrix}\quad B:=\begin{bmatrix}5\\ 1\\ 9\\ 5\end{bmatrix}$$

$$X:=A^{-1}\,B=\begin{bmatrix}1\\ 1\\ -1\\ 1\end{bmatrix}$$

$$\operatorname{lsolve}(A,B)=\begin{bmatrix}1\\ 1\\ -1\\ 1\end{bmatrix}$$

$$\begin{bmatrix}1 & 0 & 0 & 0\\ 0 & 1 & 0 & 0\end{bmatrix}$$