```
\begin{array}{l} n=n\\ (k)\\ k=\\ \underline{k}=\\ \underline{k}\\ (k)=\\ 0\\ n=\\ 0\\ \subseteq\\ M_n()\\ \subseteq\\ M_n=\\ m=\\ m \\ \subseteq^m \end{array}

\begin{array}{l}
    m \subseteq m \\
    n() \\
    n() = M_n() \setminus V(\det = 0),
\end{array}

V(f = 0) = \{x \in \mathbb{M}: f(x) = 0\}
f(x) = 0
\begin{array}{c} m = 1 \\ M_n() \\ G := n \\ () \\ \mu : G \times G \longrightarrow G \\ (g,h) \longmapsto gh \end{array} \qquad \begin{array}{c} i : G \longrightarrow G \\ g \longmapsto g^{-1} \end{array} \qquad \begin{array}{c} e : \{x\} \longrightarrow G \\ x \longmapsto e =_n \end{array}
     _{i}^{e}
     A^{-1} = red \frac{1}{\det(A)} \cdot adj(A)
     \stackrel{n}{(\mu,)}=
          (,\mu)
     G\times G\times G(\mu,)(,\mu)G\times G\mu G\times G\mu G(g,h,l)[mapsto][mapsto](gh,l)[d,endanchor=[xshift=-1.5em,yshift=-0.5em]nor(h,h)[mapsto][mapsto](gh,h)[d,endanchor=[xshift=-1.5em,yshift=-0.5em]nor(h,h)[mapsto](gh,h)[mapsto](gh,h)[d,endanchor=[xshift=-1.5em,yshift=-0.5em]nor(h,h)[mapsto](gh,h)[mapsto](gh,h)[d,endanchor=[xshift=-1.5em,yshift=-0.5em]nor(h,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[mapsto](gh,h)[
\begin{array}{l} \stackrel{e\circ}{\underset{\mu\circ}{=}} \\ \stackrel{\mu\circ}{\underset{\rho\circ}{=}} \\ \stackrel{\mu\circ}{\underset{\mu\circ}{=}} \\ \stackrel{\mu\circ}{\underset{(i,)\circ}{=}} \\ \stackrel{\lambda\circ}{\underset{\Delta}{=}} \end{array}
     G\times G(,i)Gp\Delta G\times G\mu\{x\}eG(g,g)[mapsto]g[mapsto][mapsto][mapsto][mapsto](g,g^{-1})[d,endanchor=[xshift=0.5em,yshift=-1.5em][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][mapsto][maps
     \stackrel{\mu\circ}{(e,)} ==
       (,e)
       G(e,)[bendright, swap, endanchor = [xshift = 0.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto][bendright, mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu Gg[mapsto, endanchor = [xshift = 2.5em]] rrG \times G\mu 
     [f_1(x_1,\ldots,x_n),\ldots,f_m(x_1,\ldots,x_n)] = f(x_1,\ldots,x_n)
  \begin{array}{l} f_j \in \\ k[x_1, \dots, x_n] \\ j \in \\ \{1, \dots, n\} \\ U \subset \\ f : \overline{U} \to \\ f = \\ \frac{h}{a} \end{array}
\begin{array}{l} \frac{h}{g}, g \in \\ h, g \in \\ k[x_1, \dots, x_n] \\ g(x) \neq \\ 0 \in \\ U \\ f = \\ \frac{h_j}{g_j} \\ f \end{array}
```

```
\begin{array}{l} g_1,\ldots,g_m \\ k[x_1,\ldots,x_n] \\ M \subseteq M \\ M = V(I) = \{x \in ^n \colon g_i(x) = 0 fr1 \le i \le m\} \end{array}
               V(0) = {n \atop V(1)} =
              GL_n()
M_n()
GL_n()
               _n() \hookrightarrow M_n() \times A \mapsto *A, \frac{1}{\det(A)}
(1)
                                   Ab jetzt immer, wenn nichts anderes gesagt, offen und abgeschlossen bezglich Zariski-Topologie!
                         ,\cdot]:V\times V\longrightarrow V(v,w)\longmapsto [v,w]
               egin{aligned} & (v,w) = \\ & -[w,v] \\ & *[u,v],w+ \\ & *[v,w],u+ \\ & *[w,u],v= \end{aligned}
               \begin{bmatrix} k \\ V \\ [v, w] := 0 \end{bmatrix}

\begin{array}{l}
(0, a_1) \\
(0, a_1) \\
(1, a_2) \\
(1, a_2) \\
(1, a_3) \\
(1, a_4) \\
(1, a_2) \\
(1, a_4) \\
(1,
                _{2}() := \{A \in M_{2}() : (A) = 0\} = *h = (1)00 - 1, e = (0)100, f = (0)010
                                  Ab jetzt: "algebraische Gruppe" = "lineare algebraische Gruppe" = "affine algebraische Gruppe"
               (G) :=:= T_e G,
             T_eV(f_1,\ldots,f_n) = *x \in ^n : \frac{d}{dt}f_i(e+tx)\Big|_{t=0} = 0berk =
```

 $\left|T_{(0,0)}V(f)=*x\in^2:\frac{d}{dt}f((0,0)+t(x_1,x_2))\right|_{t=0}=0=*x\in^2:\frac{d}{dt}(tx_1)^2-tx_2\big|_{t=0}=0=*x\in^2:2tx_1-x_2\big|_{t=0}=0=\{x\in^2:x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=0=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_1-x_1-x_2|_{t=0}=x_1-x_2|_{t=0}=x_$