It is a little note about so called Jacobian problem.

Let $P(x,y)$ and $Q(x,y)$ be two polynomipals on variables x,y such that

$$\det \begin{pmatrix} \frac{\partial P}{\partial x} & \frac{\partial P}{\partial y} \\ \frac{\partial Q}{\partial x} & \frac{\partial Q}{\partial y} \end{pmatrix} = 1 \tag{1}$$

Then the inverse functions are always polynomials too. For example to the polynomial transformation

$$\begin{cases} x \mapsto x + (x+y)^3 \\ y \mapsto x + y \end{cases}$$

corresponds inverse transformation

$$\begin{cases} x \mapsto x - y^3 \\ y \mapsto y + y^3 - x \end{cases}$$

As is stated in the book of Kirillov: ("Shto takoje chislo"—broshjura, 1993 god) this problem is unsolved till now. (Kak ja ponimaju net kontrprimera i ne dokazano eto utverzhdenije.) One can following to this book consider non-commutative version of this problem. Let W be associative algebra with unity, generated by two generators p and q which obey only to the constraint:

$$pq - qp = 1$$

(Weyl algebra) Let A and B be two polynomials on p and q such that

$$AB - BA = 1 \tag{2}$$

Then the endomorphism generated by the map

$$p \mapsto A, q \mapsto B$$

has to be an isomorphism!—i.e. p and q can be expressed as polynomials of A and B. You see that the first problem is quwsiclassical limit of the second one (commutator (2) $\to$ Poisson bracket = jakobian.)