0. Introduction. Our main result of this paper is the following

**Theorem.** Let $A$ be a noetherian unique factorization domain and let $R$ be an $A$-algebra of finite type such that with $(n-1)$-indeterminates $t_1, \ldots, t_{n-1}$, $R \otimes_A [t_1, \ldots, t_{n-1}] \cong A[x_1, \ldots, x_n]$ is an $n$-dimensional polynomial ring over $A$. Then $R$ is a one-dimensional polynomial ring over $A$.

When $A$ is a field, this is a special case of

Problem of Zariski. Let $k$ be a field of arbitrary characteristic, let $A^n$ and $A^m$ be the affine spaces over $k$ of dimensions $n$ and $m$ respectively and let $V$ be an affine variety over $k$ such that $V \times A^m \cong A^n$. Then $V$ is isomorphic to the affine space $A^{n-m}$ of dimension $n-m$.

The theorem was proved independently by S. Abhyankar, P. Eakin and W. Heinzer in [1]. However the author publishes this paper because he believes that his viewpoint is different from theirs and because he hopes that the method employed in this paper would have a contribution to further investigations of higher dimensional case.

Our method is as follows: Since $\text{Spec}(R[t_1, \ldots, t_{n-1}])$ is isomorphic to $\text{Spec}(R) \times \text{Spec}(A[t_1, \ldots, t_{n-1}])$, the $(n-1)$-product $G_{n,A}^{n-1}$ of the additive group scheme $G_{n,A}$ defined over $A$ acts canonically on $\text{Spec}(R[t_1, \ldots, t_{n-1}])$, hence on the $n$-dimensional affine space $A^n$ over $A$ and the ring $R$ is recovered as the ring of invariants with respect to the action of $G_{n,A}^{n-1}$.

The crucial results are:

1° $R$ is a unique factorization domain with units contained in $A$.

2° Let $K$ be the quotient field of $A$. Then $R \otimes_A K$ is a polynomial ring of dimension 1 over $K$.

These results 1° and 2° combined will yield a proof of the above theorem.

Moreover we shall make one remark on relationship among the problem of Zariski, the conjecture of Serre and the Jacobian conjecture. (The last two conjectures will be given later.)