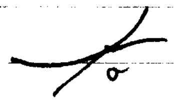
the tangent line at r_2 and the line joining r_1 & r_2 form. This fact allows us to conclude that two disjoint open sets are parallel. Wrong!

Node $\equiv$ Ordinary double point. see P66 Fulton.

Thus we can conclude that $\pi_p(S)$ is a plane algebraic curve whose only singularities are nodes.

 $\Rightarrow$ π_p is not immersive. Wrong!

But since p is not any line meeting S in two points with intersecting tangent lines, at $q_1, q_2 \in \pi_p^{-1}(o)$, the tangent lines are parallel.

Correction: If p is not any line meeting S in two points with intersecting tangent lines,

 can not happen since the tangent lines at $q_1 \in \pi_p^{-1}(o)$, $q_2 \in \pi_p^{-1}(o)$ lie in the plane spanned by the line joining q_1 & q_2 and any one of the tangent lines. $\Rightarrow$ The two tangent lines intersect with each other.

Suppose π_p is 2-1 on some nbd of S. We have the same situation as above, i.e., there are two points $q_1, q_2 \in S$ s.t the tangent lines at q_1, q_2 intersect each other. Since $\pi_p(q_1) = \pi_p(q_2)$, p is on the line joining q_1 & q_2. //

Note also that for a curve $S \subset \mathbb{P}^N$ and smooth