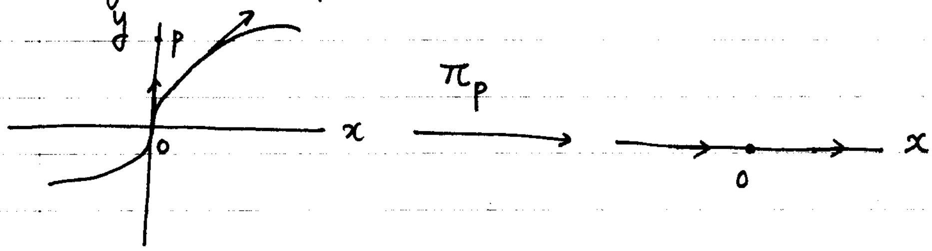
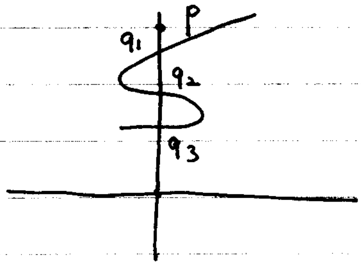
At the origin, $\pi_{p*}$ is zero map.




Since $p$ is not on any line meeting $S$ in more than two points, $\pi_p$ is at most $2-1$.
If $p \in l$, $S \cap l \ni q_1, q_2, q_3$ distinct each other,




$\Rightarrow \pi_p(q_1) = \pi_p(q_2) = \pi_p(q_3)$

Transform as follows:

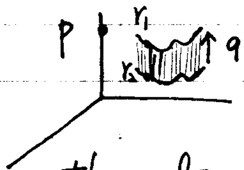
$p \longmapsto [(0,0,0,1)] \in \mathbb{P}^3$

$q_1 \longmapsto [(0,0,1,0)] \in \mathbb{P}^3$

$\Rightarrow \quad q_{\cancel{1}2} = [(0,0,a,b)]$

$q_3 = [(0,0,a',b')] \quad \Rightarrow \pi_p(q_2) = \pi_{\cancel{q}p}(q_3)$
$= \pi_p(q_1)$.

Since $p$ is not on any line meeting $S$ in two points with intersecting tangent lines,
$\pi_p$ is $2-1$ at isolated points.
Suppose $\pi_p$ is $2-1$ on some nbd of $S$.
$\Rightarrow$ Since $S$ do(es)n't have intersecting tangent lines, $S$ has two disjoint open sets which are "parallel" each other. This is impossible since $S = S + q$ where $+q$ means the translation by $q$ in $\mathbb{P}^3$




Here we assumed that $S$ is irreducible. The tangent line at $r_1$ and the line joining $r_1$ & $r_2$ form the plane which