$p \in N$, $f^{-1}(p)$ is a single point, then the graph $\Gamma_f \subset M \times N$ of f has intersection number 1 with the fibers $M \times \{p\}$, and so defines an inverse rational map.

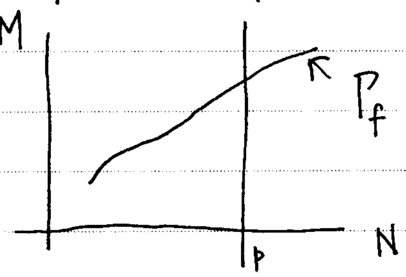
pf (⇒) By the above, $\exists\ g : N \longrightarrow M$ rational s.t

$$\begin{tikzcd} M-V \arrow[r, "f"] \arrow[rr, bend right, "id"'] & N-W \arrow[r, "g"] \arrow[rr, bend right, "id"'] & M-V \arrow[r, "f"] & N-W \end{tikzcd}$$

$\Rightarrow$ $M-V \xrightarrow{f} N-W$ is biholomorphic, where V, W are subvarieties of M & N respectively.

$\Rightarrow$ f is generically one to one.

(⇐) $\#(\Gamma_f \cap M \times \{p\}) = 1$ if $f^{-1}(p)$ is a single point.



Define $g : N \longrightarrow M$ by

$$\begin{array}{ccc} N & \longrightarrow & M \\ \rotatebox{90}{$\in$} & & \rotatebox{90}{$\in$} \\ p & \longmapsto & g(p) \end{array}, \quad f(g(p)) = p$$

$\Rightarrow$ By the inverse function theorem, for generic $p \in N$, g is holomorphic. $\Rightarrow$ g is biholomorphic since g has an inverse. $\Rightarrow$ $g : N-V \longrightarrow g(N-V) \subset \mathbb{P}^n$, since $N-V \subset \mathbb{P}^n$. Question: If M is a complex manifold, and $\exists$ an open dense subset U in M, which is embedded in $\mathbb{P}^n$, then M is embedded into a projective space?