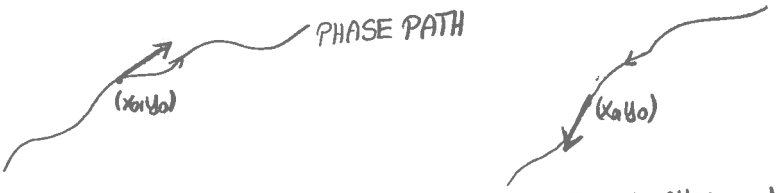
$$\dot{x} = f(x,y)$$
$$\dot{y} = g(x,y)$$

$E = \{(x,y) \in \mathbb{R}^2 \mid (x,y)$. EQUILIBRIUMPOINT$\}$



↗ TANGENTIAL TO THE PHASE PATH THROUGH (x_0,y_0)

$$\tan(\phi(x_0,y_0)) = \frac{g(x_0,y_0)}{f(x_0,y_0)}$$

Γ .. SMOOTH, SIMPLE
NO EQUILIBRIUMPOINTS ON Γ

$$[\bar{\phi}]_\Gamma = 2\pi I_\Gamma$$

$[\bar{\phi}]_\Gamma$ .. VARIATION OF ϕ ALONG Γ

$I_\Gamma \in \mathbb{Z}$ .. INDEX OF Γ.

$E \cap int(\Gamma) = \phi$ ⇒ $I_\Gamma = 0$

$\Gamma' \subseteq \Gamma$
$E \cap (int(\Gamma) \setminus int(\Gamma')) = \phi$ ⇒ $I_\Gamma = I_{\Gamma'}$

⇓

I_Γ INDEPENDENT OF Γ
"ONLY" DEPENDENT ON THE EQUILIBRIUMPOINTS INSIDE.