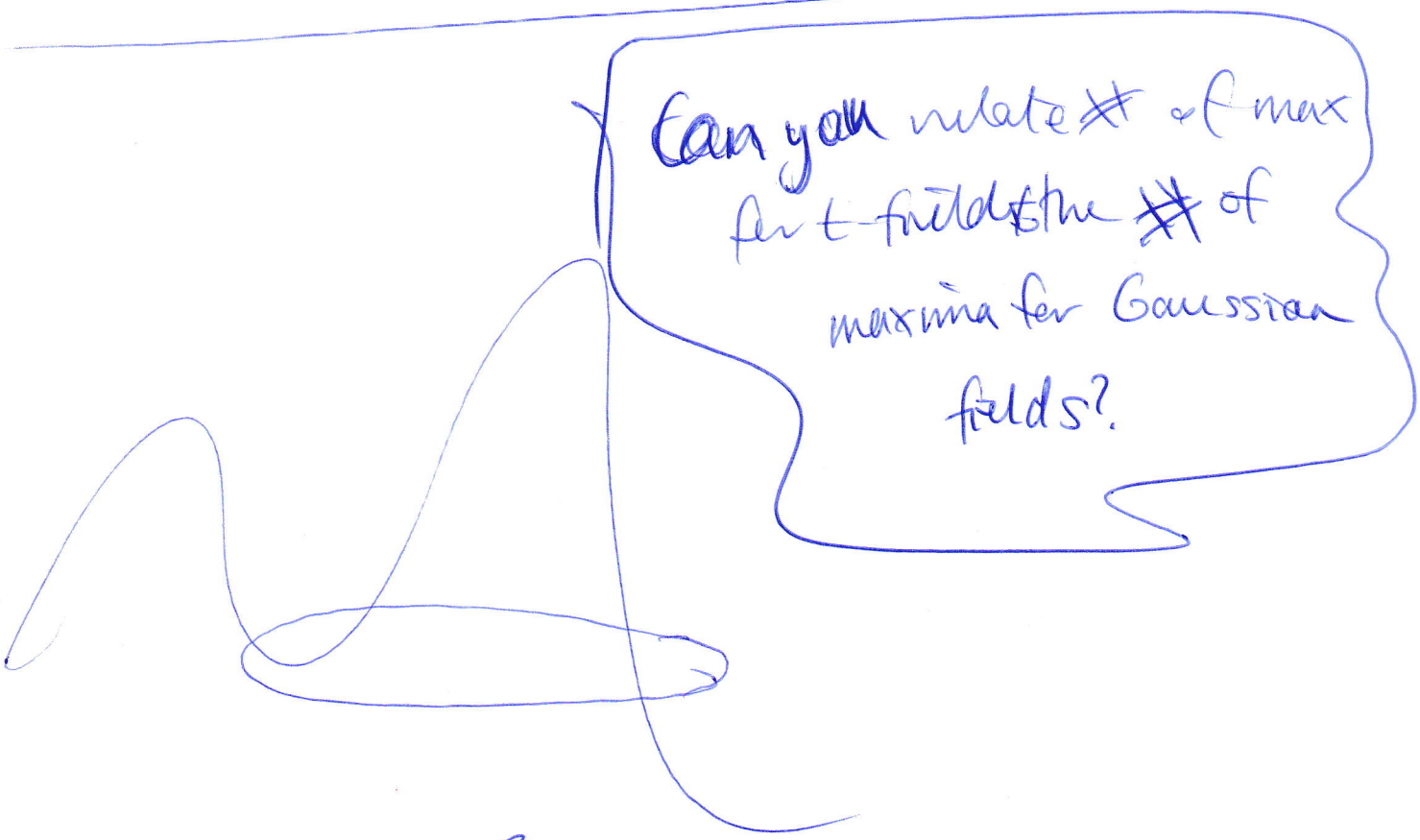
~~$\#\{t^* : \mu(\varepsilon) \geq 1\}$~~ $\Leftrightarrow$ $\sup_{\mathring{B}} f > \sup_{\partial B} f$.

$$\mathbb{P}\left(\nabla^2 X(t_0) < \delta \,\middle|\, \sup_{\mathring{B}} f > \sup_{\partial B} f \right)$$



Claim: $\mathbb{P}\left(\nabla^2 X(t_0) \,||\, \mathcal{M} \right) = 1$

WTS: $\mathbb{P}\left(0 < \nabla^2 X(t_0) < \delta \,||\, \mathcal{M} \right) \to 0$ as $\delta \to 0$

Suppose not then $\exists \alpha > 0$. s.t $\forall \delta$.

Set $\mathbb{P}\left(0 < \nabla^2 X(t_0) < \delta \,||\, \mathcal{M} \right) > \alpha$