$\mathbb{P}(\cancel{\mu^{\delta}_n} \; \mu^{\delta}_n(\xi) \geq 1 \cancel{\}})$

$$\lim_{\varepsilon \to 0} \left(\frac{\mathbb{P}(\mu^{u}(\varepsilon) \geq 1)}{\mathbb{P}(\mu(\varepsilon) \geq 1)} \right)$$

$$\le \frac{\mathbb{P}(\mu_{<\delta}(\varepsilon) \geq 1)}{\mathbb{P}(\mu_{\geq\delta}(\varepsilon) \geq 1)}$$

could show this ratio ~~is~~ is small ~~for small~~ δ

$$=$$

$$\underbrace{\frac{\mathbb{P}(\mu^{u}_{\geq\delta\, \nabla^2}(\varepsilon) \geq 1) + \mathbb{P}(\mu^{u}_{\leq\delta}(\varepsilon) \geq 1)}{\mathbb{P}(\mu_{\geq\delta}(\varepsilon) \geq 1) + \mathbb{P}(\mu_{\leq\delta}(\varepsilon) \geq 1)}}_{A}$$

condition on a nearby point outside the open ball t^* having $\nabla^2 f(t^*) > \delta$

$$A \le \frac{\mathbb{P}(\mu^{u}_{\geq\delta}(\varepsilon) \geq 1) + \mathbb{P}(\mu^{u}_{<\delta}(\varepsilon) \geq 1)}{\mathbb{P}(\mu_{\geq\delta}(\varepsilon) \geq 1)}$$