So. overall have a bound of: ⑤

$$r \sum_{\sigma \in S_D} \sum_{j=1}^{D} L^{K''_{j\sigma(j)}} C \int_{B_r} \mathbb{E}[\delta_\varepsilon(\nabla X(t))]\, dt$$

$L'' = \max_{ij} L^{K''_{ij}}$

$$\leq r D \times D! \times L'' \times C \int_{B_r} \underbrace{\mathbb{E}[\delta_\varepsilon(\nabla X(t))]}\, dt.$$

$\longrightarrow P_{\nabla X(t)}(0)$ as $\varepsilon \to 0$

$$\longrightarrow r D \times D! \times L'' \times C \int_{B_r} P_{\nabla X(t)}(0)\, dt$$

$$\frac{1}{r^D} \int_{B_r} P_{\nabla X(t)}(0)\, dt \longrightarrow P_{\nabla X(t)}(t_0)$$

as $r \longrightarrow 0$

so the r term means this $\frac{1}{r^D}$ tends to 0.

holds by dominated convergence

as $\int_{B_r} \mathbb{E}[\delta_\varepsilon(\nabla X(t))]\, dt = \int_{B_r} \int_{\mathbb{R}^N} \delta_\varepsilon(x) P_{\nabla X(t)}(x)\, dx.$

~~$\leq$~~ sup