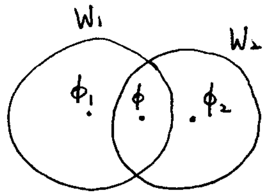
so that

(5) $$\phi + \delta_i W_i \subset \phi_i + W_i \subset V_i \qquad (i = 1, 2).$$

Hence (1) holds with $W = (\delta_1 W_1) \cap (\delta_2 W_2)$, and (a) is proved.

∵ $\phi + W \subset \phi + \delta_1 W_1 \subset \phi_1 + W_1 \subset V_1$ and $\phi + W \subset \phi + \delta_2 W_2 \subset \phi_2 + W_2 \subset V_2$



$\Rightarrow \phi + W \subset V_1 \cap V_2$.

Suppose next that ϕ_1 and ϕ_2 are distinct elements of $\mathcal{D}(\Omega)$, and put

(6) $$W = \{ \phi \in \mathcal{D}(\Omega) : \|\phi\|_0 < \|\phi_1 - \phi_2\|_0 \},$$

where $\|\phi\|_0$ is as in (1) in Section 6.2. Then $W \in \beta$ and ϕ_1 is not in $\phi_2 + W$.

∵ $\mathcal{D}_K \cap W \overset{?}{\in} \tau_K$ $\qquad$ W is convex and balanced clearly.

To show $\mathcal{D}_K \cap W$ is open in $\mathcal{D}_K$, we want to find V_N s.t, for $f \in \mathcal{D}_K \cap W$, $f + V_N \subset \mathcal{D}_K \cap W$.

$\|f\|_0 < M \overset{= \|\phi_1 - \phi_2\|_0}{\ }$ $\Rightarrow$ Let $M - \|f\|_0 = \ell$. Choose K_N s.t $K_N \supset K$ and $\frac{1}{N} < \ell$.

$\Rightarrow$ Since $V_N = \{ \phi \in \mathcal{D}_K ; \max\{|D^\alpha \phi(x)| ; x \in K, |\alpha| \le N\} < \frac{1}{N} \}$, $f + V_N \subset W \cap \mathcal{D}_K$. $\Rightarrow W \in \beta$.

$\|\phi_1 - \phi_2\|_0 \cdot \Rightarrow \phi_1 - \phi_2 \in W \Rightarrow \phi_1 \notin \phi_2 + W$.