(1) $\mathcal{D}_K \cap V \in \tau_K$ if $V \in \tau$ and $K \subset \Omega$.

Statement (a) is an immediate consequence of (1), since it is obvious that $\beta \subset \tau$.

⌈ V convex balanced set in $\mathcal{D}(\Omega)$. and V open. in $\mathcal{D}(\Omega)$
$\Rightarrow$ $\mathcal{D}_K \cap V$ open in $\mathcal{D}_K$.(?).

To show this, $\phi \in \mathcal{D}_K \cap V$. $\Rightarrow$ We proved that $\exists$ W s.t $\phi + W \subset \mathcal{D}_K \cap V$, which implies that $\mathcal{D}_K \cap V$ is open in $\mathcal{D}_K$. $\Rightarrow$ $V \in \beta$.
Conversely, if $V \in \beta$, then V is convex balanced. and $V \cap \mathcal{D}_K \in \tau_K$ $\Rightarrow$ $V \in \tau$. $\Rightarrow$ V is open in $\mathcal{D}(\Omega)$. ⌋

One-half of (b) is proved by (1).

⌈ We have to prove that $\tau \cap \mathcal{D}_K \overset{\{V \cap \mathcal{D}_K \mid V \in \tau\}}{=} \tau_K$ for (b).
By the argument above, if $V \in \tau$, then $V \cap \mathcal{D}_K \in \tau_K$.
$\Rightarrow$ $\tau \cap \mathcal{D}_K \subset \tau_K$. ⌋

For the other half, suppose $E \in \tau_K$. We have to show that $E = \mathcal{D}_K \cap V$ for some $V \in \tau$. The definition of τ_K implies that to every $\phi \in E$ correspond N and $\delta > 0$ such that

(2) $$\{\psi \in \mathcal{D}_K : \|\psi - \phi\|_N < \delta\} \subset E.$$

⌈ $\phi \in E \in \tau_K$ $\Rightarrow$ $\exists$ $\phi + V_N \subset E$, where $V_N = \{\psi \in \mathcal{D}_K : \|\psi\|_N < \frac{1}{N}\}$
$\Rightarrow$ $\phi + V_N = \{\psi' \in \mathcal{D}_K : \|\psi' - \phi\|_N < \frac{1}{N}\} \subset E$. ⌋

Put $W_\phi = \{\psi \in \mathcal{D}(\Omega) : \|\psi\|_N < \delta\}$. Then $W_\phi \in \beta$, and