$$\leqq Me^{\omega t}\|x\| \int_0^t |\varphi(\tau)| \, d\tau$$

for every $\varphi \in \Phi$, $x \in D_1(A_1, A_2, \ldots, A_n)$, $t \in R^+$ and $i \in \{1, 2, \ldots, n\}$.

Using 5, we see from (30) that

(56) the set Φ is dense in $L_{loc}(R^+, R)$.

Taking into account (48) and (56) and applying 8 to (55) we get immediately

$$\left\| A_i \frac{1}{(i-1)!} \int_0^t (t - \tau)^{i-1} \mathscr{W}_0(\tau, x) \, d\tau \right\| \leqq Me^{\omega t}\|x\| \tag{57}$$

for every $x \in D_1(A_1, A_2, \ldots, A_n)$, $t \in R^+$ and $i \in \{1, 2, \ldots, n\}$.

Further, it follows from (43) and (57) that

$$\|\mathscr{W}_0(t, x)\| \leqq \left[nMe^{\omega t} + \frac{t^m}{m!} \right] \|x\| \tag{58}$$

for every $x \in D_1(A_1, A_2, \ldots, A_n)$ and $t \in R^+$.

Since by the assumption the operators $A_1, A_2, \ldots, A_n$ are closed and the set $D_1(A_1, A_2, \ldots, A_n)$ is dense in E, it is an easy matter to show by means of (36), (37), (40), (42), (43), (57) and (58) that there exists an extension $\mathscr{W} \in R^+ \times E \to E$ such that

(59) $\mathscr{W}(t, x) = \mathscr{W}_0(t, x)$ for every $x \in D_1(A_1, A_2, \ldots, A_n)$ and $t \in R^+$,

(60) the function $\mathscr{W}$ possesses the properties 2.13 (a)–(f).

We see from our assumptions, from Proposition 22 and from the just proved property (60) that Theorem [2] 2.17 is applicable and according to it, the system of operators $A_1, A_2, \ldots, A_n$ is correct of class m.

The proof is complete.

29. Remark. The only difference in apriori assumptions of Theorems 27 and 28 is in the density of certain domains of the operators $A_1, A_2, \ldots, A_n$. It is clear that under the assumptions 28 (α)–(γ), the system of operators $A_1, A_2, \ldots, A_n$ is converse of class m if and only if it is correct of class m.

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