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# On quasi-equicontinuous sets – Sets of solutions of a differential equation –

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In the previous papers [5], [6], we have studied some kinds of transformations of differential equations. In the present paper the same subject will be studied more systematically.

In §1 we introduce the new concept of "quasi-equicontinuity." In §2 we study the correspondence between "quasi-equicontinuous sets" and "equicontinuous sets". In §3 and §4 we shall find it convenient to introduce the new concept into the theory of differential equations. Theorem 7 in §4 is an extension of theorems discussed in the previous papers.

## 1. Notations and definitions.

**Notations.** 1) *Given two sets* $E$, $F$, $\boldsymbol{F}(E, F)$ *denotes the set of all functions defined on* $E$ *with values in* $F$. $\boldsymbol{F}_1(E, F)$ *denotes the set of all functions each of which is defined on a subset of* $E$ *with values in* $F$. *Then clearly* $\boldsymbol{F}(E, F) \subset \boldsymbol{F}_1(E, F)$. *For each* $u \in \boldsymbol{F}_1(E, F)$ $A_u$ *denotes the subset of* $E$ *on which* $u$ *is defined. We denotes by* $\tau$ *such an element* $u$ *of* $\boldsymbol{F}_1(E, F)$ *as* $A_u = \phi$[1].

2) *Given two topological spaces* $E$, $F$, $\boldsymbol{C}(E, F)$ *denotes the set of all continuous functions on* $E$ *to* $F$. *Clearly* $\boldsymbol{C}(E, F) \subset \boldsymbol{F}(E, F)$. $\boldsymbol{C}_1(E, F)$ *denotes the subset of* $\boldsymbol{F}_1(E, F)$ *such that for each* $u \in \boldsymbol{C}_1(E, F)$.

*a*) $A_u$ *is open,*

*b*) $u$ *is continuous on* $A_u$,

*c*) *if* $x_0$ *belongs to* $\bar{A}_u$[2] *but not to* $A_u$, *there is no point*

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1) $\phi$ means the empty set.

2) $\bar{A}$ means the closure of $A$.