Let R be an equivalence relation on the set E. The family $(C_x)_{x \in E}$ of the associated equivalence classes create a partition of the set E.

Proof:
1- Proove that $\forall (i,j) \in I^2, C_i \cap C_j \neq \ \Rightarrow C_i = C_j$
Let $x \in C_i, C_i \cap C_j \neq$ and R an equivalence relation
$\Rightarrow \exists y \in C_j \mid xRy$
$\Rightarrow \forall z \in C_j, yRz \Rightarrow zRx$
$\Rightarrow C_i = C_j$

2- Proove that $\forall i \in I, C_i \neq$
Let $x \in E$ and C_i its equivalence class
$\Rightarrow x \in C_i \Rightarrow \forall i \in I, C_i \neq$

3- Proove that $\bigcup_{i \in I} C_i = E$
Let $x \in E$
$\Rightarrow \exists i \in I \mid x \in C_i$
$\Rightarrow E \subset C_i \subset \bigcup_{i \in I} C_i$
Let $x \in \bigcup_{i \in I} C_i$
$\Rightarrow x \in E$
$\Rightarrow E \supset \bigcup_{i \in I} C_i$