Maman 11

Note: I'll be using e.g. $\neg(A \cup B)$
to represent the complement of $(A \cup B)$
(My editor doesn't support superscript or overline)

ב 2

Prove:
if $P(A) \vee P(B) = P(C)$, then $(C=A) \vee (C=B)$

Since:
$(C=A) \vee (C=B) \equiv (C\subseteq A \wedge A\subseteq C) \vee (C\subseteq B \wedge B\subseteq C)$
I'll be proving the latter.

First: proof that $C\subseteq A \vee C\subseteq B$

$C \in P(C)$ // power set definition
$P(C) = P(A) \vee P(B) \Rightarrow C \in (P(A) \vee P(B))$
$C \in P(A) \vee C \in P(B)$