

**Proposition 12.26** Let  $C$  and  $Q_i$  be disjoint subsets of the vertex set  $V$  of a graph  $G$  and  $W_i$  be a subset of  $Q_i$  for  $1 \leq i \leq k$ , where  $k \geq 2$ . Assume that there exist at least two  $i$  such that  $W_i \neq \emptyset$ . If  $Q_i$ ,  $1 \leq i \leq k$ , are disconnected in  $G \setminus C$ , then those  $W_i$  which are nonempty are disconnected in  $G \setminus (C \cup \bigcup_{i=1}^k (Q_i - W_i))$ .