**1**. Let $G \subset \mathbb{C}$ be an open bounded set whose boundary consists of finitely many piecewise $C^1$ components. Suppose $f$, $g : \overline{G} \to \mathbb{C}$ are continuous in $\overline{G}$ and holomorphic in $G$, with no zeros on $\partial G$. Further suppose that

$$|f(z) + g(z)| < |f(z)| + |g(z)| \quad \text{if } z \in \partial G.$$

Show that $f$ and $g$ have the same number of zeros in $G$ counting multiplicity.

**2**. Let $G \subset \mathbb{C}$ be open, $a \in G$, and $r > 0$ such that $\overline{B(a,r)} \subset G$. Let $f : [0,1] \times G \to \mathbb{C}$ be continuous, holomorphic in the $z$-variable, and such that $f(t,z) \neq 0$ when $t \in [0,1]$ and $|z - a| = r$. Show that the functions $z \mapsto f(0,z)$ and $z \mapsto f(1,z)$ have the same number of zeros in $B(a,r)$ counting multiplicity.