Prove or disprove each of the following statements. Write detailed proof structures and justify your work.

1. For all real numbers $r, s$, if $r$ and $s$ are both positive, then $\sqrt{r} + \sqrt{s} \neq \sqrt{r+s}$.

2. For all real numbers $x$ and $y$, $x^4 + x^3y - xy^3 - y^4 = 0$ exactly when $x = \pm y$.