The following problems are about affine planes of order $n$. The axioms for an affine plane of order $n$ are:

Axiom A1. There exist at least 4 distinct points no 3 of which are collinear.
Axiom A2. There exists at least 1 line with exactly $n$ points on it.
Axiom A3. Given any 2 distinct points, there exists exactly one line passing through the 2 points.
Axiom A4. Given any line $\ell$ and any point $P$ not on $\ell$, there is exactly 1 line through $P$ that does not intersect $\ell$.

1. Show that an affine plane of order $n$ does not satisfy the principle of duality.
2. Show that in an affine plane of order $n$, each point has exactly $n + 1$ lines passing through it.
3. Show that in an affine plane of order $n$, each line has exactly $n$ points on it.
4. Show that in an affine plane of order $n$, each line is parallel to exactly $n - 1$ lines.
5. Show that in an affine plane of order $n$, there are exactly $n^2$ points and exactly $n^2 + n$ lines.