46. Compute the dimensions of Grassmannians $\text{Gr}(d, n)$ and flag manifolds $\text{Fl}(n)$.

47. Show that two irreducible varieties $X$ and $Y$ are birational, i.e. their function fields are isomorphic: $K(X) \cong K(Y)$, if and only if there exist affine open subsets $U_X \subseteq X$ and $U_Y \subseteq Y$ which are isomorphic: $U_X \cong U_Y$.

48. Assume $\text{char}(K) = p > 0$. Show that the map $\mathbb{G}_m \to \mathbb{G}_m, x \mapsto x^p$ is a bijective morphism of affine algebraic groups, but is not an isomorphism.

49. Let $G$ be a linear algebraic group, acting on a quasi-projective variety $X$. Show that orbits of minimal dimension are closed; in particular, closed orbits exist. (Hint: you can use the statement of exercise 25.)

50. Let $G$ be a connected projective algebraic group. Show that $G$ is commutative.