Final exam for Math 534.

1. Prove the global existence and uniqueness theorems for connected semisimple algebraic groups. (You can use any facts that we have *proved* in class).

2. Prove that the simply connected cover of $\mathrm{SO}_3(\mathbb{C})$ is the group $\mathrm{SL}_2(\mathbb{C})$.

3.* Prove that the simply connected cover of $\mathrm{SO}_5(\mathbb{C})$ is $\mathrm{Sp}_4(\mathbb{C})$.