1. Prove that if F is an injective sheaf of abelian groups on X then F is flasque.

2. Prove that if F' is a flasque sheaf of abelian groups and

$$0 \to F' \to F \to F'' \to 0$$

is exact then F is flasque if and only if F'' is flasque.

3. Suppose X is a topological space and $j : U \to X$ is the inclusion of an open subset. For any sheaf of abelian groups F on U, let $j_!F = (F^{\text{ét}} \cup_{\{0\}\times U} \{0\} \times X)^{\text{sh}}$.

   (a) Show that $j_!F$ has the structure of a sheaf of abelian groups.

   (b) Show that $j_!$ is left adjoint to j^{-1}.

   (c) Show that $j_!(-)$ is an exact functor.

   (d) Conclude that j^{-1} preserves injectives when j is the inclusion of an open subset.