Problems

PCMI GSS 2024 - $\mathbb{A}^1$-algebraic topology (following F. Morel)

1 Let M be a sheaf of abelian groups. Show that M is n-strongly $\mathbb{A}^1$-invariant if and only if $K(M, n)$ is motivic.

2 Let S be an essentially smooth dvr with closed point x. Compute the cohomology groups with supports $H^i_x(S, \mathcal{O}^*)$.

3 Show that $SL_n/SL_{n-1} \simeq (\mathbb{A}^n \setminus \{0\}, 1)$.