

Sheet 2

Question 2.1

Show that limits and colimits of presheaves exist and are determined objectwise, i.e. $(\operatorname{colim}_I F_i)(U) \cong \operatorname{colim}_I (F_i(U))$ and $(\operatorname{lim}_I F_i)(U) \cong \operatorname{lim}_I (F_i(U))$.

Question 2.2

Check that the hom sheaf between two sheaves is a sheaf.

Question 2.3

Show the pull back of a locally constant sheaf is locally constant.

Question 2.4

Let $j : \mathbb{C} \setminus \{0\} \rightarrow \mathbb{C}$ and $i : \mathbb{R} \setminus \{0\} \rightarrow \mathbb{R}$. Let R be some abelian group. Compute $(j_* \underline{R})_0$ and $(i_* \underline{R})_0$.

These questions will be discussed in the exercise class on Friday 25 April 25.