

Sheet 1

Question 1.1

Define $S_{\mathbb{Q}}^2$ analogously to $S_{\mathbb{Q}}^1$.

Note that unfortunately the construction of $S_{\mathbb{Q}}^1$ I gave in lectures was incorrect. (It was “backwards”.) I have updated the notes with the correct construction.

Question 1.2

Compute the rational cohomology of $S_{\mathbb{Q}}^1$ from lectures.

* What can you say about integral cohomology?

Question 1.3

Compute the coproduct of two objects in the category of commutative \mathbb{Q} -algebras. (A \mathbb{Q} -algebra is just a ring which is also \mathbb{Q} vector space.)

Question 1.4

Prove that a right adjoint $G : \mathcal{D} \rightarrow \mathcal{C}$ preserves limits, i.e. let (L, α) be a limit of a diagram $D : I \rightarrow \mathcal{D}$ then $(GL, G\alpha)$ is a limit for $G \circ D : I \rightarrow \mathcal{C}$.

These questions will be discussed in the exercise class on 9/11/20.

Questions with an asterisk are more challenging.