

PERVERSE SHEAVES: QUIZZ

1. ABOUT YOU

Name, surname:

University:

Courses during the first semester:

Courses during the second semester:

2. HOW MUCH ALGEBRAIC TOPOLOGY DO YOU KNOW?

Which kind of (co)homology do you know: simplicial, singular, cellular, de Rham, sheaf, etc?

Roughly, what is cohomology all about? What is it good for?

What is the cohomology:

of \mathbb{R}^n ?

of the sphere S^n ?

of complex projective space $\mathbb{C}P^n$?

of real projective space $\mathbb{R}P^n$?

What is the cohomology with compact support:

of \mathbb{R}^n ?

of \mathbb{C}^* ?

What is the fundamental group:

of the circle?

of a torus?

of the real projective plane?

3. HOW MUCH HOMOLOGICAL ALGEBRA DO YOU KNOW?

Do you know the following categorical notions:

category
 opposite category
 functor
 Yoneda lemma
 pair of adjoint functors
 (co)limit
 abelian category
 (co)chain complex
 homotopy category
 derived category
 triangulated category
 exact sequence
 exactness (left exactness, right exactness) of a functor
 derived functors
 long exact sequence in cohomology
 snake lemma
 five lemma
 projective object
 injective object
 spectral sequence

4. HOW MUCH SHEAF THEORY DO YOU KNOW?

Do you know the following concepts:

presheaf, sheaf
 flasque / flabby sheaf
 soft sheaf
 fine sheaf
 direct image
 inverse image
 direct image with compact support
 exceptional inverse image
 local Hom
 sheaf tensor product
 Verdier duality
 formal de Rham theorem
 Leray's acyclic cover theorem
 Česh cohomology

What are sheaves all about? What are they good for?