

Lecture 20

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Summary of Homology Theory.
Cell Complexes, Simplicial and Cubic
Complexes, Singular Homology,
Diff. Forms.

Lecture 21

1) Homotopy classes of mappings into circle S^1 .
(prove with diff forms).

2) Degree of maps and behavior of integrals
along the manifold

3) Hopf invariant for ~~maps~~ mappings
 $S^{2n-1} \rightarrow S^{2n}$

Whitehead's analytic definition (diff. forms)

Lecture 22

Continuation of Lecture 21. Cycles and submanifolds of codimension 1 (orientable).

Lecture 23

Simplest examples of manifolds

(R^n , S^n , projective spaces RP^n , CP^n , HP^n , surfaces)

Connected sum of manifolds. Existence of
Morse function with precisely 1 minimum
and 1 maximum.

Lecture 24

Existence of Morse functions (rigorous proof)

Classification of surfaces. ~~Embedding~~ Embedding of manifold
in R^n .