List of exam questions, Differential Geometry 2

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1) Homotopy, deformation retraction

2) Path-homotopy

3) Fundamental group, dependence on base point

4) Induced morphism, functoriality properties

5) Invariance of fundamental group on homeomorphism and deformation retraction

6) Covering maps

7) Lifting correspondence

8) Fundamental group of the circle

9) The Fundamental Theorem of Algebra

10) No-retraction theorem

11) Brouwer's Fixed Point Theorem

12) The Seifert–van Kampen theorem

13) Fundamental groups of spheres and projective spaces

14) Fundamental groups of surfaces

15) Abelianization of groups, non-homeomorphism of surfaces

16) Smooth submanifolds in Euclidean space, immersions, submersions

17) Topological and smooth manifolds

18) Tangent space of a smooth submanifold

19) Classification of compact, connected surfaces 1: topological aspects

20) Classification of compact, connected surfaces 2: combinatorial aspects