Differential geometry

1. Elementary theory of curves, Frenet's formulas, curvature of curves

2. definition of differential manifold, in particular in dimensions two
i.e. surfaces, definition of tangent space and Riemannian metric, definition of isometries, definition of geodesics and introduction of differential equations of geodesics

3. spherical map, Gauss curvature, first and second fundamental quadratic forms of surfaces, Egregium theorem

4. Gauss-Bonnet theorem (without proof)

5. classification and examples of surfaces with constant positive, negative and equal to zero curvature