# Surfaces

**Terms**:

1. intrinsic versus extrinsic
2. geodesic
3. symmetry arguments
4. covering arguments
5. isometry
6. $x_u$, $x_v$
7. normal to surface
8. covariant derivative
9. tangent plane
10. shape operator
11. curvature vector $\vec{\kappa}$
12. normal curvature $\kappa_n$
13. principal curvatures
14. geodesic curvature $\kappa_g$
15. Gauss curvature $K$
16. mean curvature $H$
17. E
18. F
19. G
20. first fundamental form
21. surface area
22. Gauss-Bonnet formula for surfaces without boundary
23. metric form

**Parametrization, shape and geometric properties of...**

1. catenoid
2. cone
3. cylinder
4. helicoid
5. hyperbolic plane
6. plane
7. sphere
8. strake
9. torus

**Terms**:

Write out *definitions, big picture ideas and/or examples* (whatever you would find the most helpful) as we cover them.

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