1. Find the volume of the solid generated by revolving \( f(x) = x \) from \( x = -1 \) to \( x = 1 \) around the x-axis.

2. Find the volume of the solid generated by revolving \( f(x) = \frac{1}{\sqrt{1+x^2}} \) from \( x = -1 \) to \( x = 1 \) around the x-axis.

3. Find the volume of the solid generated by revolving \( f(x) = \frac{1}{\sqrt{1+x^2}} \) from \( x = -1 \) to \( x = 1 \) around the y-axis.

4. Solve the differential equation using the method of separation of variables, \( \frac{dy}{dt} = \frac{y^2+1}{t} \).

5. Find the family of orthogonal (or perpendicular) trajectories of the family of equations \( y = ke^x \).