1. Solve the IVP
\[ \frac{dy}{dx} = \frac{\sqrt{y^2 - 1}}{x - x^2}, \quad y(1/2) = 1. \]

2. Solve the DE
\[ (1 - x^2) \frac{dy}{dx} = x(1 - x^2)^{1/2} - 2xy \]

3. Determine the region in which the DE
\[ y' = \frac{\sqrt{y^2 - 1}}{x} \]
has a unique solution through \((1, -2)\).