Q1 Show that \( y = \frac{1}{\sqrt{1 - \sin x}} \) is solution of \( 2 \frac{dy}{dx} = y^3 \cos x \). Give one interval on which solution is defined.

Q2 Determine a region of xy-plane for which \( (6 - y^2) \frac{dy}{dx} = x^5 \) has unique solution.

Q3 Solve the IVP \( \frac{dy}{dx} = (x - 1)^2 (y - 1) \) with \( y(0) = 2 \).