Q1. Find an implicit solution of \(2x \sin^2 y \, dx - (x^2 + 10) \cos y \, dy = 0\). Find all singular solutions, if any.
Q2. Solve the differential equation $\frac{dy}{dx} = \frac{y}{x + y^3}$
Q3. Show that the differential equation \((y^2 + xy^3) \, dx + (5y^2 - xy + y^3 \sin y) \, dy = 0\) is not exact. Solve the d.e. by finding an appropriate integrating factor.
Q4. Solve the differential equation \( \frac{dy}{dx} = y(xy^3 - 1) \).