Q1. Solve the initial value problem $\dfrac{1}{x}\dfrac{dy}{dx} = e^{x^2 - \ln(y^2)}$; $\quad y(1) = 1, \quad x > 0.$

Q2. Find a one parameter family of solutions of the differential equation $\dfrac{dy}{dx} = \cos x - (\cot x)y.$

Q3. Find a one parameter family of solutions of the differential equation $(\tan^{-1} y)dx + \dfrac{x}{1 + y^2}dy = 0.$

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