Q1. Given the Initial Value Problem $dy/dx = x\,y^{-1/2}$, $y(3)=1$. Answer the following questions:

Does the IVP has a unique solution? Use theorem to justify your answer.

Q2.   Verify that $y = e^{3x}\cos 2x$ is an explicit solution of $y'' - 6y' + 13y = 0$. Assume an appropriate interval I of definition for the solution.

Q3. Solve the IVP $dy/dx = (x+1)^2, \quad y(0) = 1$