1. Solve the following differential equations:
   (i) $y'' = y'$ (Hint: reduce to $y' = y$).
   (ii) $y' = \frac{x^2+1}{x+1}$
   (iii) $y' = (xy)^2$
   (iv) $y' = \frac{e^y}{1+y^2}$

2. Solve the following initial-value problem: $y' = xy^2 + 2y^2$, $y(0) = 1$. 

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