

Problem 1. Solve the equation

$$yy' + xyy'' - xy'^2 = x^3$$

Problem 2. Reduce the order of the equation to first order

$$x^2yy'' + 1 = (1 - y)xy'$$

Problem 3. Reduce the order of the equation to first order

$$y^2(y'y''' - 2y''^2) = yy'^2y'' + 2y'^4$$