MATHEMATICAL ANALYSIS 2
Test 2, version C.

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1. Find the solution to the Cauchy problem

$$x^2 y' - 2xy = 3y, \quad y(-1) = 1.$$

Find the maximal interval where the solution is determined.

2. Find the general solution to equation

$$dy + (xy - xy^3)dx = 0$$

3. Find the solution to the Cauchy problem

$$y^{(4)} + y = 0, \quad y(0) = 1, \quad y'(0) = 1, \quad y''(0) = -1, \quad y'''(0) = 1.$$

4. Find the general solution to the following system:

$$\begin{cases} \dot{x} = x - y + 2\sin t \\ \dot{y} = 2x - y \end{cases}$$