

H. W. 3

① Solve the equation.

$$(i) (3x^2 + y) dx + (x^2 y - x) dy = 0$$

$$(ii) (2xy^3 + 1) dx + \left(3x^2 y^2 - \frac{1}{y}\right) dy = 0$$

$$(iii) (2y^2 x - y) dx + x dy = 0$$

② Find I.F. of the form $x^m y^n$ and solve

$$(12 + 5xy) dx + \left(6 \frac{x}{y} + 3x^2\right) dy = 0$$

③ Use method discussed under Bernoulli Eqn to solve

$$\frac{dy}{dx} = \frac{2y}{x} - x^2 y^2.$$

④ Use the method discussed under Equations with Linear Coefficients to solve

$$(i) (2x - y) dx + (4x + y - 3) dy = 0 .$$

$$(ii) (2x + y + 4) dx + (x - 2y - 2) dy = 0 .$$

⑤ solve

$$(i) \frac{dy}{dx} + xy = 0$$

$$(ii) \frac{dy}{dx} = \frac{x}{y} + \frac{y}{x}, \quad y(1) = -4 .$$