

Math 4315 - PDEs Home Work 2

1. Solve the following PDEs by the method of characteristics

$$(i) \quad xu_x + (x + 2y)u_y = x,$$

$$(ii) \quad xu_x + (u + y)u_y = 1,$$

$$(iii) \quad u_x + 2xu_y = 4xy, \quad u(x, 0) = x^4,$$

$$(iv) \quad xu_x + uu_y = u, \quad u(x, 0) = x^2.$$

Due: Sept. 29, 2023.