

Introduction to PDEs

October 1, 2018

1 Section 1.2 – Exercise 3 (Strauss)

Solve the equation $(1 + x^2)u_x + u_y = 0$. Draw some of the characteristic lines.

2 Section 1.2 – Exercise 7 (Strauss)

Solve the equation $yu_x + xu_y = 0$ with $u(0, y) = \exp\{-y^2\}$. Where is the solution uniquely determined in the xy plane?

3 Section 1.5 – Exercise 6 (Strauss)

Solve the equation $u_x + 2xy^2u_y = 0$.

4 Section 1.2 – Exercise 8 (Strauss) (Bonus)

Solve the equation $au_x + bu_y + cu = 0$.