

Exercise 9.2.5

(a) Show that the PDE

$$y \frac{\partial \psi}{\partial x} + x \frac{\partial \psi}{\partial y} = 0$$

can be transformed into a readily soluble form by writing it in the new variables $u = xy$, $v = x^2 - y^2$, and find its general solution.

(b) Discuss this result in terms of characteristics.