



First-Order Partial Differential Equations > Nonlinear Equations > Section 3.2

10. $\left(\frac{\partial w}{\partial x}\right)^2 + f(y)\left(\frac{\partial w}{\partial y}\right)^2 = g(y).$

Complete integral:

$$w = C_1x + C_2 + \int \sqrt{\frac{g(y) - C_1^2}{f(y)}} dy,$$

where C_1 and C_2 are arbitrary constants.

Reference

Polyanin, A. D., Zaitsev, V. F., and Moussiaux, A., *Handbook of First Order Partial Differential Equations*, Taylor & Francis, London, 2002.