



First-Order Partial Differential Equations > Quasilinear Equations > Section 2.1

$$13. \quad f(y) \frac{\partial w}{\partial x} + g(x) \frac{\partial w}{\partial y} = h(w).$$

The transformation

$$\xi = \int g(x) dx, \quad \eta = \int f(y) dy$$

leads to an equation of the form 2.1.5:

$$\frac{\partial w}{\partial \xi} + \frac{\partial w}{\partial \eta} = F(\xi)G(\eta)h(w), \quad \text{where } F(\xi) = \frac{1}{g(x)}, \quad G(\eta) = \frac{1}{f(y)}.$$

Reference

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