



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

$$10. \quad ae^{\lambda x} \frac{\partial w}{\partial x} + be^{\beta y} \frac{\partial w}{\partial y} = f(w).$$

General solution:

$$\int \frac{dw}{f(w)} = -\frac{1}{a\lambda} e^{-\lambda x} + \Phi(u), \quad u = a\lambda e^{-\beta y} - b\beta e^{-\lambda x},$$

where $\Phi(u)$ is an arbitrary function.

Reference

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