First-Order Partial Differential Equations > Quasilinear Equations > Section 2.2

6.　$\dfrac{\partial w}{\partial x} + \big[\, f(w) + g(x)\big]\dfrac{\partial w}{\partial y} = 0.$

General solution:

$$y = xf(w) + \int g(x)\,dx + \Phi(w),$$

where $\Phi(w)$ 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.