



First-Order Partial Differential Equations > Quasilinear Equations > Section 2.3

10. 
$$\frac{\partial w}{\partial x} + f(x, w) \frac{\partial w}{\partial y} = g(x).$$

General solution:

$$y = \int_{x_0}^x f(t, G(t) - G(x) + w) dt + \Phi(w - G(x)),$$

where  $G(x) = \int g(x) dx$  and  $\Phi(u)$  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.