



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

5. 
$$\frac{\partial w}{\partial x} + a \frac{\partial w}{\partial y} = f(x)g(y)h(w).$$

General solution:

$$\int \frac{dw}{h(w)} = \int_{x_0}^x f(t)g(y - ax + at) dt + \Phi(y - ax),$$

where  $\Phi(u)$  is an arbitrary function,  $x_0$  may be taken arbitrary.

### Reference

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