



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

1.
$$\frac{\partial w}{\partial x} + [aw + yf(x)] \frac{\partial w}{\partial y} = 0.$$

General solution:

$$yF(x) - aw \int F(x) dx = \Phi(w), \quad F(x) = \exp \left[- \int f(x) dx \right],$$

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.