



First-Order Partial Differential Equations > Linear Equations > Section 1.2

$$7. \quad \frac{\partial w}{\partial x} + [ay + f(x)] \frac{\partial w}{\partial y} = g(x).$$

General solution:

$$w = \int g(x) dx + \Phi(u), \quad \text{where} \quad u = e^{-ax}y - \int f(x)e^{-ax} dx,$$

$\Phi(u)$ 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.