

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

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

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.

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http://eqworld.ipmnet.ru/en/solutions/fpde/fpde1207.pdf