

First-Order Partial Differential Equations > Nonlinear Equations > Section 3.3

6.
$$\frac{\partial w}{\partial x} + F\left(x, \frac{\partial w}{\partial y}\right) = aw$$
.

Complete integral:

$$w = e^{ax}(C_1y + C_2) - e^{ax} \int e^{-ax} F(x, C_1e^{ax}) dx,$$

where C_1 and C_2 are arbitrary constants.

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/fpde3306.pdf