

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

16.
$$F\left(\frac{\partial w}{\partial x} + ay, \frac{\partial w}{\partial y} + ax\right) = 0.$$

Complete integral:

$$w = -axy + C_1x + C_2y + C_3,$$

where C_1 and C_3 are arbitrary constants and the constant C_2 is related to C_1 by $F(C_1, C_2) = 0$.

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/fpde3316.pdf