

First-Order Partial Differential Equations > Nonlinear Equations > Section 3.2

7.
$$\left(\frac{\partial w}{\partial x}\right)^2 + \left(\frac{\partial w}{\partial y}\right)^2 = f(w)$$
.

Complete integral in implicit form:

$$\int \frac{dw}{\sqrt{f(w)}} = \pm \sqrt{(x+C_1)^2 + (y+C_2)^2},$$

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/fpde3207.pdf