



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

$$20. \quad F\left(w, \frac{\partial w}{\partial x}, \frac{\partial w}{\partial y}\right) = 0.$$

Complete integral:

$$w = w(z), \quad z = C_1x + C_2y,$$

where C_1 and C_2 are arbitrary constants, and $w = w(z)$ is determined by the autonomous ordinary differential equation $F(w, C_1w'_z, C_2w'_z) = 0$.

References

- Kamke, E.**, *Differentialgleichungen: Lösungsmethoden und Lösungen, II, Partielle Differentialgleichungen Erster Ordnung für eine gesuchte Funktion*, Akad. Verlagsgesellschaft Geest & Portig, Leipzig, 1965.
- Polyanin, A. D., Zaitsev, V. F., and Moussiaux, A.**, *Handbook of First Order Partial Differential Equations*, Taylor & Francis, London, 2002.