



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

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

Complete integral in implicit form:

$$\int \sqrt{\frac{C_1^2 + C_2^2 f(w)}{g(w)}} dw = C_1 x + C_2 y + C_3,$$

where  $C_1$ ,  $C_2$ , and  $C_3$  are arbitrary constants (one of the constants  $C_1$  or  $C_2$  can be set equal to  $\pm 1$ ).

### Reference

**Polyanin, A. D., Zaitsev, V. F., and Moussiaux, A.,** *Handbook of First Order Partial Differential Equations*, Taylor & Francis, London, 2002.