

First-Order Partial Differential Equations > Linear Equations > Section 1.1

11.
$$x\frac{\partial w}{\partial x} + f(x^n e^{\alpha y})\frac{\partial w}{\partial y} = 0$$
.

- $1^{\circ}. \ \ \text{Principal integral:} \ \ \Xi = \int \frac{dv}{v \left[n + \alpha f(v) \right]} \ln |x|, \ \ \text{where} \ v = x^n e^{\alpha y}.$
- 2° . General solution: $w = \Phi(\Xi)$, where $\Phi(\Xi)$ is an arbitrary function.

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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