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

**7.**  $\dfrac{\partial w}{\partial x} + f(ax + by + c)\dfrac{\partial w}{\partial y} = 0, \qquad b \neq 0.$

1°.  Principal integral:  $\Xi = \displaystyle\int \dfrac{dv}{a + bf(v)} - x$, where $v = ax + by + c$.

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.

http://eqworld.ipmnet.ru/en/solutions/fpde/fpde1107.pdf