9. $ay^n\dfrac{\partial w}{\partial x}+bx^k\dfrac{\partial w}{\partial y}=f(w).$

General solution:

$$a\int\frac{dw}{f(w)}=\int\left(\frac{b}{a}\frac{n+1}{k+1}x^{k+1}-u\right)^{-\frac{n}{n+1}}dx,\qquad u=\frac{b}{a}\frac{n+1}{k+1}x^{k+1}-y^{n+1}.$$

Here, $\Phi(u)$ is an arbitrary function; in the integration, u is considered a parameter.

Reference

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

