7. $\dfrac{\partial w}{\partial x} + [ay + f(x)]\dfrac{\partial w}{\partial y} = g(x).$

General solution:

$$w = \int g(x)\,dx + \Phi(u), \quad \text{where} \quad u = e^{-ax}y - \int f(x)e^{-ax}\,dx,$$

$\Phi(u)$ 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.