4. $a\dfrac{\partial w}{\partial x} + b\dfrac{\partial w}{\partial y} = f(x) + g(y).$

General solution:

$$w = \frac{1}{a}\int f(x)\,dx + \frac{1}{b}\int g(y)\,dy + \Phi(bx - ay),$$

where $\Phi(u)$ 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.