**7.** $\dfrac{\partial w}{\partial x} + \big[f(w) + g(y)\big]\dfrac{\partial w}{\partial y} = 0.$

General solution:

$$x = \int_{y_0}^{y} \frac{dt}{g(t) + f(w)} + \Phi(w),$$

where $\Phi(w)$ 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.