



48. $y''_{xx} = f(x)g(xy'_x - y)$.

The substitution $w = xy'_x - y$ leads to a first-order separable equation: $w'_x = xf(x)g(w)$.

Reference

Polyanin, A. D. and Zaitsev, V. F., *Handbook of Exact Solutions for Ordinary Differential Equations, 2nd Edition*, Chapman & Hall/CRC, Boca Raton, 2003.