



49. $y''_{xx} = \frac{y}{x^2} f\left(\frac{xy'_x}{y}\right).$

The substitution $w(x) = xy'_x/y$ leads to a first-order separable equation: $xw'_x = f(w) + w - w^2.$

Reference

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