

$$49. \quad y_{xx}^{\prime\prime} = \frac{y}{x^2} f\left(\frac{xy_x^{\prime}}{y}\right).$$

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.

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http://eqworld.ipmnet.ru/en/solutions/ode/ode0349.pdf