

3.  $y_{xxx}^{""} = f(y)$ .

Autonomous equation. The substitution  $w(y) = (y'_x)^2$  leads to a second-order equation:  $w''_{yy} = \pm 2f(y)w^{-1/2}$ .

## Reference

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

Copyright © 2004 Andrei D. Polyanin

http://eqworld.ipmnet.ru/en/solutions/ode/ode0503.pdf