



30.  $y'_x = -\frac{n}{m} \frac{y}{x} + y^k f(x)g(x^n y^m).$

The substitution  $z = x^n y^m$  leads to a separable equation:  $z'_x = m x^{\frac{n-nk}{m}} f(x) z^{\frac{k+m-1}{m}} g(z).$

### Reference

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