



12. $F(x^m e^{\alpha y}, xy'_x, x^2 y''_{xx}, \dots, x^n y_x^{(n)}) = 0.$

Equation invariant under “dilatation–translation” transformation. The transformation $z = x^m e^{\alpha y}$, $w = xy'_x$ leads to an $(n - 1)$ st-order equation.

Reference

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