



31. $y''_{xx} = -ay'_x + e^{ax} f(ye^{ax})$.

The transformation $\xi = e^{ax}$, $w = ye^{ax}$ leads to an autonomous equation of the form 3.1:
 $w''_{\xi\xi} = a^{-2}f(w)$.

Reference

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