

36.
$$yy_{xx}'' - n(y_x')^2 + f(x)y^2 + ay^{4n-2} = 0$$
.

- 1°. For n = 1, this is an equation of the form 3.37.
- 2°. For $n \neq 1$, the substitution $w = y^{1-n}$ leads to Ermakov (Yermakov) equation 3.5:

$$w_{xx}'' + (1-n)f(x)w + a(1-n)w^{-3} = 0.$$

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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