### 7. $F\left(x, y'_x, y''_{xx}, \ldots, y^{(n)}_x\right) = 0.$

***The equation does not depend on $y$ explicitly.*** The substitution $w(x) = y'_x$ leads to an $(n-1)$st-order equation:

$$F\left(x, w, w'_x, \ldots, w^{(n-1)}_x\right) = 0.$$

## References

**Kamke, E.,** *Differentialgleichungen: Lösungsmethoden und Lösungen, I, Gewöhnliche Differentialgleichungen*, B. G. Teubner, Leipzig, 1977.

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



 