



18. $y''_{xx} + [ay + f(x)]y'_x + f'_x(x)y = 0.$

Integrating yields a Riccati equation: $y'_x + f(x)y + \frac{1}{2}ay^2 = C.$

Reference

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