

$$5. \quad \frac{\partial w}{\partial t} = a \frac{\partial}{\partial x} \left(w^{2n} \frac{\partial w}{\partial x} \right) + b w^{1-n}.$$

Generalized traveling-wave solution:

$$w(x,t) = \left[\pm \frac{x + C_1}{\sqrt{C_2 - kt}} - \frac{bn^2}{3a(n+1)}(C_2 - kt)\right]^{1/n}, \quad k = \frac{2a(n+1)}{n},$$

where C_1 and C_2 are arbitrary constants.

Reference

Polyanin, A. D. and Zaitsev, V. F., Handbook of Nonlinear Partial Differential Equations, Chapman & Hall/CRC, Boca Raton, 2004.

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http://eqworld.ipmnet.ru/en/solutions/npde/npde1205.pdf