2. $\dfrac{\partial^2 w}{\partial t^2} = a\dfrac{\partial}{\partial x}\left(w^n \dfrac{\partial w}{\partial x}\right) + bw^k.$

There are solutions of the following forms:

$$w(x,t) = U(z), \quad z = \lambda x + \beta t \qquad \text{traveling-wave solution;}$$

$$w(x,t) = t^{\frac{2}{1-k}} V(\xi), \quad \xi = xt^{\frac{k-n-1}{1-k}} \qquad \text{self-similar solution.}$$

References

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