



4.  $\frac{\partial w}{\partial t} = \frac{\partial^2 w}{\partial x^2} + aw + bw^m.$

1°. Traveling-wave solutions (the signs are chosen arbitrarily):

$$w(x, t) = [\pm\beta + C \exp(\lambda t \pm \mu x)]^{\frac{2}{1-m}},$$

where  $C$  is an arbitrary constant and  $\beta = \sqrt{-\frac{b}{a}}$ ,  $\lambda = \frac{a(1-m)(m+3)}{2(m+1)}$ ,  $\mu = \sqrt{\frac{a(1-m)^2}{2(m+1)}}$ .

2°. For  $a = 0$ , there is a self-similar solution of the form  $w(x, t) = t^{1/(1-m)}U(z)$ , where  $z = xt^{-1/2}$ .

### References

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