

# Asymptotic properties of solutions of differential equations

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Asymptotic properties of solutions have been considered for some nonlinear differential equations. The paper deals with investigation of bounded solutions, of prolongation of solutions, oscillatory solutions and another asymptotic properties.

The examples have been stated which illustrate the given methods and have physical interest. For general information is referred a short reference.

As special cases we will consider generalizations of the Emden-Fowler equation

$$(r(x)y^{(n)})^{(n)} = f(x)|y|^\gamma y \quad (1)$$

where  $\gamma > 0$ .

We consider the Emden-Fowler equation

$$y'' = Ax^\sigma y^n, A = const, \sigma = const \quad (2)$$

which arises in a number of physical problems, connected with problems of gas dynamics. We obtain asymptotic formulas for all positive solutions of the equation.

$$y'' = Ax^{1-\gamma}y^{1-2\gamma} \quad (3)$$

on  $[1, \infty]$  ( see [?]).

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