

Oscillation and nonoscillation of half-linear second order differential equation with alternating potential

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Abstract: In this work we study the questions of oscillation and nonoscillation of the following half-linear second order differential equation

$$\left(\rho(t) |y'(t)|^{p-2} y'(t)\right)' + q(t) |y(t)|^{p-2} y(t) = 0, \quad t \geq 0, \quad (HL)$$

on the interval $I = (a, \infty)$, $-\infty \leq a < \infty$, when $1 < p < \infty$, $p \neq 2$. Here $\rho(t) > 0$ and $q(t)$ continuous functions on I .

The results of investigations of the properties and methods for the equation (HL) up to year 2005 are exposed in the book by Došlý and Řehák [1].

For researching properties of equation (HL) we use the variational method, and we establish the conditions of oscillation and nonoscillation of the equation (HL), when the function $q(t)$ changes the sign on the interval I .

Keywords: oscillation, nonoscillation, half-linear equation, alternating potential, variational method

2010 Mathematics Subject Classification: 34C10

REFERENCES

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