

On Integral Inequalities for Certain Nonlinear Second Order Differential Equations

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In this talk, by using elementary analysis, we present some integral inequalities related to the zeros of the solutions of the nonlinear second order differential equations of the form

$$\left(r(t) |y(t)|^\gamma |y'(t)|^{\alpha-1} y'(t) \right)' + q(t) |y(t)|^{\gamma+\beta-1} y(t) = 0, \quad (\text{A})$$

where $t \in I = [t_0, \infty)$, $t_0 \geq 0$ and $[a, b] \subset I$, $\alpha > 1, \beta > 1, \gamma > 0$, the function $r : I \rightarrow \mathbb{R}$ is in $C^1(I, \mathbb{R})$ -smooth and $r > 0$, and the function $q : I \rightarrow \mathbb{R}$ is continuous. The inequalities obtained here can be used as handy tools in study of qualitative behavior of solutions of the associated equations.

References and Literature for Further Reading

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