

# Stability and asymptotic properties of neutral delay differential equations

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This contribution discusses qualitative properties of the linear differential equation

$$(1) \quad y'(t) = ay(t) + by(\phi(t)) + cy'(\phi(t)),$$

where  $a, b, c$  are real constants and  $\phi(t)$  is a delay function with appropriate properties. We consider (1) in the pure delayed case ( $c = 0$ ) as well as in the neutral case ( $c \neq 0$ ) and describe its stability and asymptotic properties with respect to the value of  $c$  and the form of  $\phi(t)$ . Furthermore, we consider some basic discretizations of (1) and show that their qualitative analysis can inspire a discussion of interesting problems in the theory of difference equations.

## *References*

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