

# PROPERTIES OF COEFFICIENTS OF ANALYTICAL PERIODIC FUNCTIONS

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**ABSTRACT:** *If function  $f(x)$  is analytical, then it can be presented by convergent exponential sequence which, due to its convergence (d'Alembert's criterium), can be differentiated and integrated, member by member and as a rule it has Taylor's coefficients. However, in this work we have determined the properties of coefficient sequence when function is analytical, but also periodic with period  $\omega$ . We have also shown that for the periodic function the coefficient sequence has the following form  $a_k = \frac{\varphi^{(k)}(\omega)}{k!} = \frac{\varphi^{(k)}(2\omega)}{k!} = \frac{\varphi^{(k)}(n\omega)}{k!}$ . In this way we have obtained infinite number of Taylor's formulae which are valid near the points  $0, 2\omega, \dots, n\omega$ .*