ON CONVERGENT METHODS OF 3 ORDER FOR SOLVING NON-LINEAR OPERATIONAL EQAUTIONS.

Abstract.

The present paper is concerned to the study of solving operational equation $P(x) = 0$ by iterative methods where the operation $P(x)$ transforms the Banach space X into Y a space of the same type. We also suppose that $P(x)$ is continuous and admits Frechet derivatives to the 3 order, inclusively.

The algoritmus

$$x_{n+1} = x_n - [I + (I - \lambda A_n)^{-1} A_n] \Gamma_n P(x_n)$$

is applied, where by Γ_n and A_n the expressions $[P'(x^n)]^{-1}$ and $\frac{1}{2} \Gamma_n P''(x_n) \Gamma_n P(x_n)$ are denoted. For $\lambda = 0, 1, 2$, the results from [3], [4] and [5] are obtained.