Cauchy-jev problem reda $n$ je definisan diferencijalnom jednačinom:

$$\mathbf{u}(x) = \mathbf{f}(x, \mathbf{u}(x))$$

uz početni uslov $\mathbf{u}(x_0) = \mathbf{u}^{(0)}$. Ovde je:

$$\mathbf{u}(x) = \begin{bmatrix} u_0(x) \\ u_1(x) \\ \dots \\ u_{n-1}(x) \end{bmatrix}$$

zatim:

$$\mathbf{f}(x, \mathbf{u}(x)) = \begin{bmatrix} f_0(x, u_0, u_1, \dots, u_{n-1}) \\ f_1(x, u_0, u_1, \dots, u_{n-1}) \\ \dots \\ f_{n-1}(x, u_0, u_1, \dots, u_{n-1}) \end{bmatrix}$$

i:

$$\mathbf{u}^{(0)} = \begin{bmatrix} u_0^{(0)} \\ u_1^{(0)} \\ \dots \\ u_{n-1}^{(0)} \end{bmatrix}$$