In this paper, we study integral curves or flow lines of a linear vector field in (2n+1)-dimensional semi-Euclidean space E_{v}²??¹. The skew symmetric matrix has been found depending on the number of timelike vectors are odd or even. Taking into consideration of the structure, we obtained the linear first order system of differential equations. This system gives rise to integral curves of linear vector fields. Meanwhile solution of the system has also been presented and discussed.