

Integral curves with respect to rank of the matrix of a linear vector field in 3-dimensional Euclidean space  $E^3$  were given firstly by Karger and Novak, [4]. The results of Karger and Novak were investigated by Acratalishian in  $(2n+1)$ -dimensional Euclidean space, where  $n>1$ , [1]. In this work, we give a classification of integral curves of a linear vector field and some results in  $(2n+1)$ -dimensional Lorentzian space  $E_0^{2n+1}$ . Then, we examine our results for special case,  $n=2$ .