Natural refrigerants are naturally occurring substances, such as hydrocarbons, CO2, ammonia, water, and air. These substances can be used as refrigerant in refrigerators and air conditioners. Natural refrigerants don’t harm the ozone layer and have no or negligible climate impact. The aim of this study is to determine thermodynamic properties as enthalpy, entropy and specific volume of hydrocarbon refrigerants using neural network (NN) method. Hydrocarbon (HC) refrigerants used in the study are butane, ethane, methane and propane. The results obtained from NN have been compared to actual data from the literature. The study shows that the NN methodology is successfully applicable to determine enthalpy, entropy, and specific volume values for any temperature and pressure of refrigerants. Therefore, computation time reduces and simulation of refrigeration systems is fairly facilitated.