A novel local radial basis function Radial Basis Function-Finite Difference (RBF-FD) scheme has been developed in curvilinear geometry and implemented to unbounded fluid flows. The far field boundary condition that arises due to the unboundedness of the fluid was handled efficiently and achieved higher order accurate results. The RBF-FD is combined with an upwind-based scheme to handle convective terms effectively. The effect of shape parameter on the accuracy of the results and the variation of shape parameter with the number of nodes are numerically investigated. The order of accuracy of the method is found in comparison with a finite difference scheme.