For the Lax KdV5 equation and the KdV-Sawada-Kotera-Ramani equation, etc, their corresponding four-dimensional travelling wave systems are studied by using Congrove’s results and dynamical system method. Exact explicit gap soliton, embedded soliton, periodic and quasi-periodic wave solutions are obtained. The existence of homoclinic manifolds to three kinds of equilibria including a hyperbolic equilibrium, a center-saddle and an equilibrium with zero pair of eigenvalues is revealed. The bifurcation conditions for equilibria are given. (Received August 26, 2010)