Bound and quasi-bound states of one-dimensional systems play an important role in quantum physics. In this thesis we solve the Schrödinger equation numerically via the Milne method. We show the relation between the Schrödinger and the Milne equation. The quantum action and the quantum number function are defined. We find bound-state energies of chosen symmetrical and unsymmetrical potentials. Dependence of bound-state energies on the number of points and the step size is studied. We also analyze the influence of the choice of trial energies and the number of iterations. Then we modify the Milne equation and using the phase-amplitude method we illustrate the search of resonances on the example of a diatomic molecule.