This work considers testing normality of time series in AR and ARMA processes. Firstly we investigate properties of common normality tests, which assume independency. The main goal is to examine levels and powers of tests in dependence on distances of the roots of the characteristic polynom from unit circle. After this we study the tests, which don't assume independency. In the case of AR processes, we get good results by testing normality of residuals. More complex tests can also give good results, but these tests need many observations and are difficult from the numerical point of view.