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1) In control theory and stability theory, root locus analysis is a graphical method for examining how the roots of a system change with variation of a certain system parameter commonly a gain within a feedback system.

This is a technique used as a stability criteria in the field of classical control theory which can determine stability of the system. The root of the locus plots the poles of the closed loop transfer function in the complex s-plane as a function of a gain parameter.

2a) Entire row is zero on the Routh table:

In order to find out the stability in this case, we will first find out an auxiliary equation. The auxiliary equation can be formed by using the elements of the row just above the row of zero in the routh array and after finding the auxiliary equation, we will differentiate it to obtain elements of the zero row. If there is no sign change in the new routh array formed by using auxiliary equation, then in this, we say the system given is limited stable - while in all other cases we would say the given system is unstable.

2b) To determine the poles on the jw axis

When the table is completed, the number of sign changes in the first column will be the number of non-negative poles. But sometimes the coefficients of the Routh table in a whole row become zero and thus further calculation of the elements of the array is not possible. This happens when the exist conjugate poles on the imaginary axis and in this case, we must use the auxiliary polynomial which is built from the coefficients of the last non-zero row and then differentiate it.