When analyzing a root locus plot, you can determine the roots (i.e., the locations of the closed-loop poles) for a specified open-loop gain value. Here are some key points to consider:

Open-Loop Gain Selection: Choose a specific value for the open-loop gain (K) that you want to analyze. This value can be determined based on the desired system performance or stability requirements.

Locate the Corresponding Point on the Root Locus: Locate the point on the root locus plot that corresponds to the selected open-loop gain value. This point can be found by following the locus path from the initial poles (or zeros) until it intersects with the line representing the selected gain value.

Determine the Closed-Loop Poles: Once you have identified the point on the root locus for the specified gain, determine the corresponding closed-loop poles. These poles represent the locations of the system's poles when operating with the selected gain value.

Complex Conjugate Poles: If the selected gain intersects with a complex conjugate pole pair on the root locus, the resulting closed-loop poles will also be complex conjugate pairs. The real part of these poles will be equal to the real part of the complex conjugate poles at the intersection point.

Real Poles: If the selected gain intersects with a real pole on the root locus, the resulting closed-loop pole will remain at the same location, as the real part of the pole is unaffected by the gain.

Stability Analysis: Analyze the stability of the system for the specified gain value based on the location of the closed-loop poles. If all the closed-loop poles are located in the left-half plane (i.e., have negative real parts), the system is stable. However, if any of the closed-loop poles are in the right-half plane (i.e., have positive real parts), the system is unstable.

System Performance: In addition to stability, you can also evaluate the system's performance based on the location of the closed-loop poles. For example, the damping ratio, natural frequency, settling time, and overshoot can be estimated from the pole locations. It's important to note that the root locus plot provides a graphical representation of the system's pole locations as the gain varies. By analyzing the plot at a specific gain value, you can determine the corresponding pole locations and assess the stability and performance characteristics of the system.