**Analytical Procedure**

Using the given parameters, the team was able to formulate mathematical method to calculate the angles at of the linked elements. With the provided lengths of bars, using the Law of Sines and Cosines enabled the team to find the angles of angle AOF, angle EAO, angle BCE, angle CDF, angle CEF, and angle EFD of the initial orientation at time . When calculating for the angles in quadrangle CDEF, an arbitrary line was calculated to divide it into two triangles CDF and CEF to calculate angle CFD and angle CFE, and then combined to find angle EFD. Angle CDF and CEF was found using trigonometric identities from triangle AOE, and angle DCE is found because of the internal angles of quadrangle being 360 degrees. By setting the length OA as a function of time as provided: , the forementioned angles can be written in terms of and , and as a result, functions of time. Once the angles were discovered, using the *diff* function in MATLAB allowed the team to differentiate the angles in terms of to find angular velocities and accelerations. Further utilizing the angles written as a function of time, trigonometry -mainly law of sines and cosines- allowed the team to find the position of points A, B, C, D, E, and F on - plane in terms of function of time. The opening time was given as , and t has to be within . Array of in increment of from 0 to 2 was substituted into the equations to plot the trajectory of points A, B, C, D, E, and F. Furthermore, the equations of these points on - plane was differentiated with respect to to derive and plot linear velocities and linear accelerations in x and y directions.

The MATLAB code is able to plot angles, angular velocities, and angular accelerations of angle AOF, angle EAO, angle BCE, angle CDF, angle CEF, and angle EFD versus time, and trajectory, linear velocities, and linear accelerations of points A, B, C, D, E, and F on - plane. Additionally, the code can execute the calculations with different provided lengths of , , , , , , and , as long as the configuration of the elements are unchanged.