Homework 6 – Relative accelerations, acceleration diagrams

1. Analyze the accelerations at point E on the wheel, if the wheel’s center point O has a constant velocity to the right, \(v_O\). This is the known, in whose terms all answers are expressed. Consider \(r\), the radius of the wheel to be known too.

Draw the velocity diagram for point E. Calculate \(\omega_{OE}\). Find \(\vec{a}_E\). Then break \(\vec{a}_E\) up into components, normal and parallel to the path of travel of E. (See development on this problem, linked on website.)

2. Review the analysis of the quick-return mechanism, linked on the website. At the end of the analysis, it asked you to analyze the mechanism in the pose where link 4 is to the right of the vertical, inclined 15°. Analyze this pose, given that \(\omega_2\) is constant at 20 rpm CCW and the dimensions are all those given in that analysis.