**FIGURE P7-17**

Problem 7-47

†7-47   Figure P7-17 shows a paper roll off-loading mechanism driven by an air cylinder. In the
position shown, $AO_2 = 1.1$ m at 178° and $O_4A$ is 0.3 m at 226°. $O_2AO_4A = 0.93$ m at
163°. The V-links are rigidly attached to $O_4A$. The air cylinder is retracted at a constant
acceleration of 0.1 m/sec$^2$. Draw a kinematic diagram of the mechanism, write the
necessary equations, and calculate and plot the angular acceleration of the paper roll and
the linear acceleration of its center as it rotates through 90° CCW from the position
shown.