

**FIGURE P7-3**

Configuration and terminology for problems 7-7 to 7-8 and 7-59

- *†7-7 The link lengths and the values of θ_2 , ω_2 , and γ for some inverted fourbar slider-crank linkages are defined in Table P7-3. The general linkage configuration and terminology are shown in Figure P7-3. For the row(s) assigned, find the accelerations of the pin joints A and the acceleration of slip at the sliding joint. Solve by the analytical vector loop method of Section 7.3 for the open configuration of the linkage.
- *†7-8 Repeat problem 7-7 for the crossed configuration of the linkage.
- †7-59 Write a program using an equation solver or any computer language to solve for the displacements, velocities, and accelerations in an inverted slider-crank linkage as shown in Figure P7-3. Plot the variation in all link's angular and all pin's linear positions, velocities, and accelerations with a constant angular velocity input to the crank over one revolution for both open and crossed configurations of the linkage. To test the program, use data from row *e* of Table P7-3 except for the value of α_2 which will be set to zero for this exercise.

* Answers in Appendix F.

† These problems are suited to solution using *Mathcad*, *Matlab*, or *TKSolver* equation solver programs.

TABLE P7-3 Data for Problems 7-7 to 7-8

Row	Link 1	Link 2	Link 4	γ	θ_2	ω_2	α_2
<i>a</i>	6	2	4	90	30	10	-25
<i>b</i>	7	9	3	75	85	-15	-40
<i>c</i>	3	10	6	45	45	24	30
<i>d</i>	8	5	3	60	25	-50	20
<i>e</i>	8	4	2	30	75	-45	-5
<i>f</i>	5	8	8	90	150	100	-65