



FIGURE P4-15

Problems 4-29 to 4-30

- \*†4-29 For the linkage in Figure P4-15, find its limit (toggle) positions in terms of the angle of link  $O_2A$  referenced to the line of centers  $O_2O_4$  when driven from link  $O_2A$ . Then calculate and plot the angular displacement of links 3 and 4 and the path coordinates of point  $P$  between those limits, with respect to the angle of the input crank  $O_2A$  over its possible range of motion referenced to the line of centers  $O_2O_4$ .
- \*†4-30 For the linkage in Figure P4-15, find its limit (toggle) positions in terms of the angle of link  $O_4B$  referenced to the line of centers  $O_4O_2$  when driven from link  $O_4B$ . Then calculate and plot the angular displacement of links 2 and 3 and the path coordinates of point  $P$  between those limits, with respect to the angle of the input crank  $O_4B$  over its possible range of motion referenced to the line of centers  $O_4O_2$ .

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\* Answers in Appendix F.

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† These problems are suited to solution using *Mathcad*, *Matlab*, or *TKSolver* equation solver programs. In most cases, your solution can be checked with program FOURBAR, SLIDER, or SIXBAR.