

**FIGURE P5-2**

Data for Problems 5-12 to 5-15

- †5-12 Design a linkage to carry the body in Figure P5-2 through the two positions P_1 and P_2 at the angles shown in the figure. Use analytical synthesis without regard for the fixed pivots shown. Hint: Try the free choice values $z = 2$, $\phi = 150^\circ$, $\beta_2 = 30^\circ$; $s = 3$, $\psi = -50^\circ$, $\gamma_2 = 40^\circ$.
- †5-13 Design a linkage to carry the body in Figure P5-2 through the two positions P_2 and P_3 at the angles shown in the figure. Use analytical synthesis without regard for the fixed pivots shown. Hint: First try a rough graphical solution to create realistic values for free choices.
- †5-14 Design a linkage to carry the body in Figure P5-2 through the three positions P_1 , P_2 , and P_3 at the angles shown in the figure. Use analytical synthesis without regard for the fixed pivots shown.
- *†5-15 Design a linkage to carry the body in Figure P5-2 through the three positions P_1 , P_2 , and P_3 at the angles shown in the figure. Use analytical synthesis and design it for the fixed pivots shown.

* Answers in Appendix F.

† 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.