

**FIGURE P7-28**

Problems 7-72 to 7-73 An aircraft overhead bin mechanism - dimensions in inches

- 7-72 Find the angular accelerations of links 3 and 4, and the linear acceleration of point  $P$  in the  $XY$  coordinate system for the linkage in Figure P7-28 (p. 374) in the position shown. Assume that  $\theta_2 = -88.72^\circ$  in the  $XY$  coordinate system,  $\omega_2 = 1$  rad/sec, and  $\alpha_2 = 10$  rad/sec<sup>2</sup>. The position of the coupler point  $P$  on link 3 with respect to point  $A$  is:  $p = 15.00$ ,  $\delta_3 = 0^\circ$ .

- a. Using a graphical method.
- †b. Using an analytical method.

- †7-73 For the linkage in Figure P7-28, write a computer program or use an equation solver such as *Mathcad*, *Matlab*, or *TKSolver* to calculate and plot the angular velocity and acceleration of links 2 and 4, and the magnitude and direction of the velocity and acceleration of point  $P$  as a function of  $\theta_2$  through its possible range of motion starting at the position shown. The position of the coupler point  $P$  on link 3 with respect to point  $A$  is:  $p = 15.00$ ,  $\delta_3 = 0^\circ$ . Assume that, @  $t = 0$ ,  $\theta_2 = -88.72^\circ$  in the  $XY$  coordinate system,  $\omega_2 = 0$ , and  $\alpha_2 = 10$  rad/sec<sup>2</sup>, constant.

† 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.