

**FIGURE P7-27**

Problems 7-70 to 7-71 An oil field pump - dimensions in inches

- 7-70 Find the angular accelerations of links 3 and 4 and the linear accelerations of points A , B and P_1 in the XY coordinate system for the linkage in Figure P7-27 in the position shown. Assume that $\theta_2 = 45^\circ$ in the XY -coordinate system and $\omega_2 = 10$ rad/sec, constant. The coordinates of the point P_1 on link 4 are (114.68, 33.19) with respect to the xy coordinate system.

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

- †7-71 Using the data from Problem 7-70, write a computer program or use an equation solver such as *Mathcad*, *Matlab*, or *TKSolver* to calculate and plot magnitude and direction of the absolute acceleration of point P_1 in Figure P7-27 as a function of θ_2 .

† 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.