



**FIGURE P12-6**

Problem 12-16

\*†12-16 Figure P12-6 shows a system with three weights on a rotating shaft.  $W_1 = 9 \text{ lb @ } 90^\circ$  at a 4-in radius,  $W_2 = 9 \text{ lb @ } 225^\circ$  at a 6-in radius, and  $W_3 = 6 \text{ lb @ } 315^\circ$  at a 10-in radius. Determine the magnitudes and angles of the balance weights needed to dynamically balance the system. The balance weights in planes 4 and 5 are placed at a 3-in radius.

\* Answers in Appendix F.

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