

**FIGURE P12-3**

Problem 12-13

- [†]12-13 Figure P12-3 shows a system with two weights on a rotating shaft. $W_1 = 15 \text{ lb @ } 0^\circ$ at a 6-in radius and $W_2 = 20 \text{ lb @ } 270^\circ$ at a 5-in radius. Determine the magnitudes and angles of the balance weights needed to dynamically balance the system. The balance weight in plane 3 is placed at a radius of 5 in and in plane 4 of 8 in.

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