

**FIGURE 12-1**

Static balancing a link in pure rotation

^{*†}12-1 A system of two coplanar arms on a common shaft, as shown in Figure 12-1 (p. 611), is to be designed. For the row(s) assigned in Table P12-1, find the shaking force of the linkage when run unbalanced at 10 rad/sec and design a counterweight to statically balance the system. Work in any consistent units system you prefer.

* Answers in Appendix F.

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

TABLE P12-1 Data for Problem 12-1

Row	m_1	m_2	R_1	R_2
a.	0.20	0.40	1.25 @ 30°	2.25 @ 120°
b.	2.00	4.36	3.00 @ 45°	9.00 @ 320°
c.	3.50	2.64	2.65 @ 100°	5.20 @ -60°
d.	5.20	8.60	7.25 @ 150°	6.25 @ 220°
e.	0.96	3.25	5.50 @ -30°	3.55 @ 120°