



FIGURE P10-7

Problems 10-39 and 10-40

10-39 Figure P10-7a shows a simplified ternary link (the vertices would normally be rounded). Table P10-1 gives data for the length L , of the base of the link; the angle δ between the base and one side; the distance p along that side; the diameter d of the three holes; the thickness t ; and the material of the link. Figure P10-7b shows a (right) triangular plate and gives the moment of inertia about its CG . Break the ternary link of (a) into two right triangles and for the row(s) assigned, find the moment of inertia of the link about its CG by using the parallel axis theorem to combine the two triangles. As a first approximation, ignore the holes.

†10-40 Using the definition of the ternary link in Problem 10-39, write a computer program or use an equation solver to calculate the moment of inertia of the link in (a) about its CG . Use the data in row a of Table P10-1 to test your program. Include the effect of the holes in your calculation.

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

TABLE P10-1 Data for Problems 10-37 to 10-40

Lengths in mm, angles in deg.

Row	L	R	d	t	p	δ	Material
a	225	13	8	12	185	20	Steel
b	50	10	6	12	37	45	Steel
c	175	15	10	15	125	60	Aluminum
d	75	12	8	8	50	50	Titanium
e	187	18	12	12	150	30	Aluminum
f	138	12	12	10	75	70	Steel