2. Write a computer function that will use the trigonometric approach to solve an equation of the form Ac + Bs + D = 0. A C language prototype for this function is written as follows:

```
int solve_trig (double A, double B, double D, double *ang_a, double *ang_b);
```

The subroutine should return one if two real solutions were calculated and zero otherwise. Test your subroutine using data that you have checked by hand (or with a program such as MathCad, Mathematica, Maple, etc.)

3. A spherical quadrilateral is to be formed from the following four links:

$$\alpha_{12} = 75^\circ, \alpha_{23} = 110^\circ, \alpha_{34} = 60^\circ, \alpha_{41} = 80^\circ.$$

The value of θ_1, the input angle for this case, is 120 degrees. Determine the two sets of solutions for the remaining joint angles of the quadrilateral.

~~**4.** Assume that the twist angles (αs) of a spherical pentagon are all known. Further, values for the angles θ_4 and θ_1 are known. Explain how you would obtain values for the remaining joint angles. How many solution sets exist?~~

5. Write a computer subroutine that will solve two linear equations in two unknowns. The pair of equations may be written as

$$A_1x + B_1y = D_1$$
$$A_2x + B_2y = D_2,$$

where the coefficients A_1, A_2, B_1, B_2, D_1, and D_2 are known and the parameters x and y are unknown. The C language prototype for your program may be written as

```
int solve_pair (double *x, double *y, double A1, double B1, double D1,
    double A2, double B2, double D2);
```

The function will return a value of one if values of x and y could be obtained. It will return zero if the two equations are linearly dependent and thus unique values of x and y could not be obtained.

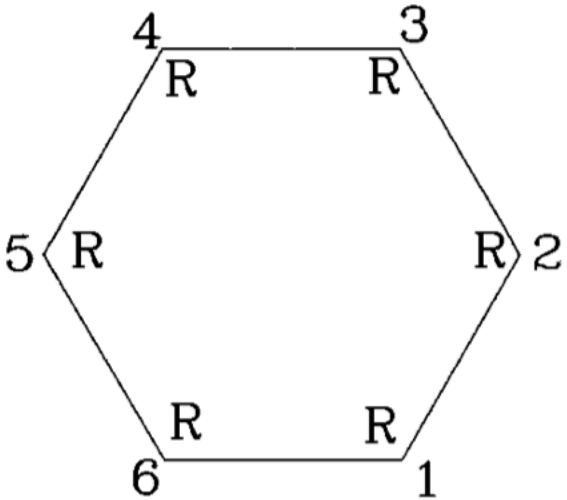

Figure 6.22. Planar representation of a spatial hexagon.

Test your subroutine using data that you have checked by hand (or with a program such as MathCad, Mathematica, Maple, etc.).