2.1   Overview (Continued)

(a)   Determine parameters of the target orbit.

(b)   Assume a rendezvous point.

(c)   Predict the transfer orbit parameters

(d)   Establish the position of the target satellite at the time of launch measured from perigee in the final orbit.

(e)   Establish the time when the launch site crosses the orbital plane measured from the vernal equinox direction in the equatorial plane.

(f)   Match the time of launch with the time the launch site crosses the orbital plane.

(g)   Iterate on the altitude of the waiting orbit.

(h)   Solve for the positions of each maneuver and the launch azimuth.

2.2   Determine Parameters of the Target Orbit

It is assumed that good tracking and orbit determination methods are available, and that these may be used to establish the target or final orbit parameters. These include the perigee radius (r_{pf}), the apogee radius (r_{af}), the inclination (i_f), the argument of perigee (ω_F) and the right ascension of the ascending node (Ω), with the subscript f indicating the final orbit.

2.3   Assume a Rendezvous Point

This rendezvous point will be reached via some type of transfer orbit from some chosen waiting orbit. Figure 2-3 shows a fully arbitratry transfer orbit, and will be used to identify the parameters of the three orbits leading to rendezvous. For generality, the point of injection into the final orbit is taken at the point of intersection of the transfer and final orbits. A transfer orbit may be chosen such that injection into the final orbit occurs at the apogee of the transfer orbit or at the point of tangency of the two orbits.