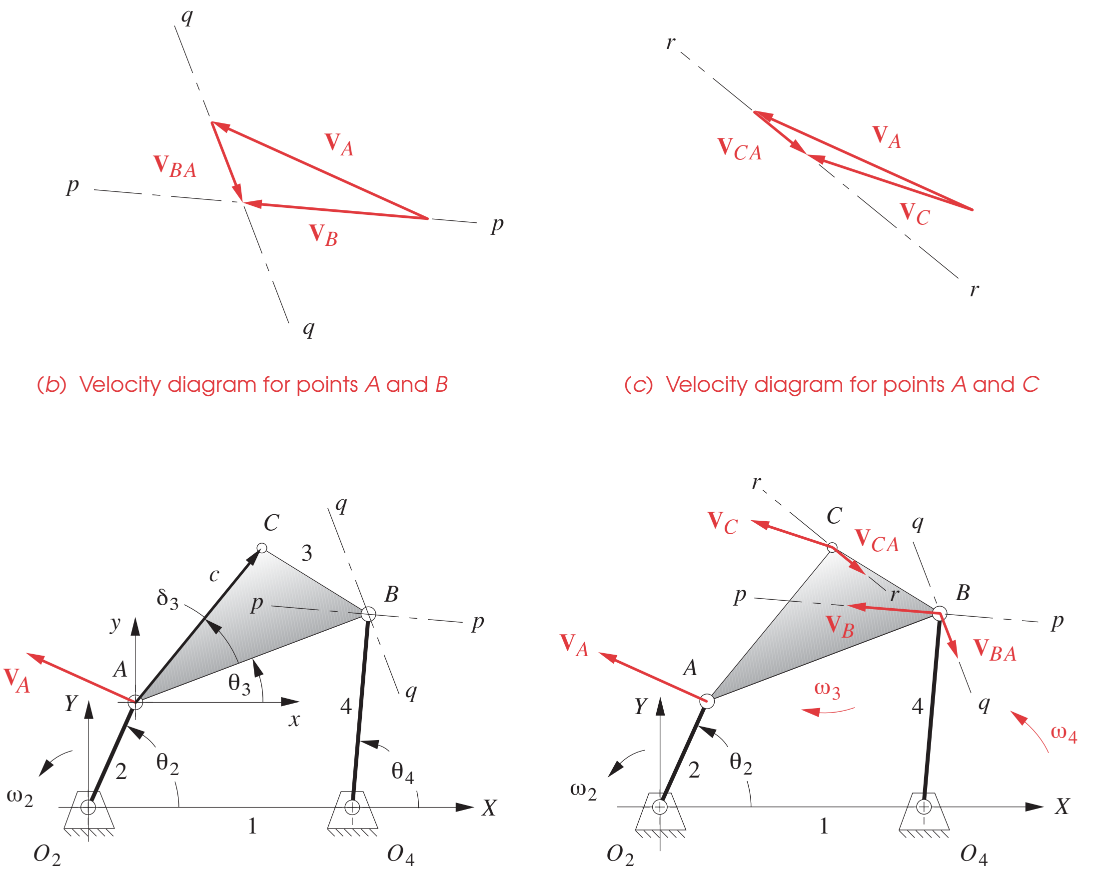

(*b*) Velocity diagram for points *A* and *B*

(*c*) Velocity diagram for points *A* and *C*

(*a*) Linkage showing velocity of point *A*

(*d*) Linkage showing velocities of points *A*, *B*, and *C*

FIGURE 6-4

Graphical solution for velocities in a pin-jointed linkage

Figure 6-4 shows a fourbar linkage in a particular position. We wish to solve for the angular velocities of links 3 and 4 (ω_3, ω_4) and the linear velocities of points *A*, *B*, and *C* ($\mathbf{V}_A$, $\mathbf{V}_B$, $\mathbf{V}_C$). Point *C* represents any general point of interest. Perhaps *C* is a coupler point. The solution method is valid for any point on any link. To solve this problem we need to know the *lengths of all the links*, the *angular positions of all the links*, and the *instantaneous input velocity of any one driving link or driving point*. Assuming we have designed this linkage, we will know or can measure the link lengths. We must also first do a **complete position analysis** to find the link angles θ_3 and θ_4 given the input link's position θ_2. This can be done by any of the methods in Chapter 4. In general we must solve these problems in stages, first for link positions, then for velocities, and finally for accelerations. For the following example, we will assume that a complete position analysis has been done and that the input is to link 2 with known θ_2 and ω_2 for this one "freeze frame" position of the moving linkage.