

4. The situation is somewhat similar to that depicted for problem 10 (see the figure that accompanies that problem). By analyzing the forces at the “kink” where  $\vec{F}$  is exerted, we find (since the acceleration is zero)  $2T \sin \theta = F$ , where  $\theta$  is the angle (taken positive) between each segment of the string and its “relaxed” position (when the two segments are colinear). Setting  $T = F$  therefore yields  $\theta = 30^\circ$ . Since  $\alpha = 180^\circ - 2\theta$  is the angle between the two segments, then we find  $\alpha = 120^\circ$ .