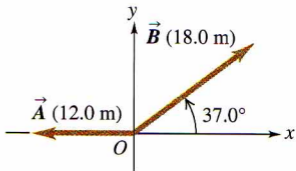
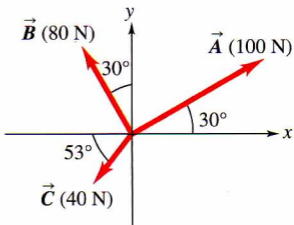


37. • For the vectors \vec{A} and \vec{B} shown in Figure 1.22, carefully sketch (a) the vector sum $\vec{A} + \vec{B}$; (b) the vector difference $\vec{A} - \vec{B}$; (c) the vector $-\vec{A} - \vec{B}$; (d) the vector difference $\vec{B} - \vec{A}$.



42. • A woman takes her dog Rover for a walk on a leash. To get the little pooch moving forward, she pulls on the leash with a force of 20.0 N at an angle of 37° above the horizontal. (a) How much force is tending to pull Rover forward? (b) How much force is tending to lift Rover off the ground?

48. • Three horizontal ropes are attached to a boulder and produce the pulls shown in Figure 1.25. (a) Find the x and y components of each pull. (b) Find the components of the resultant of the three pulls. (c) Find the magnitude and direction (the counterclockwise angle with the $+x$ axis) of the resultant pull. (d) Sketch a clear *graphical* sum to check your answer in part (c).



▲ **FIGURE 1.25** Problem 48.

49. • A disoriented physics professor drives 3.25 km north, then 4.75 km west, and then 1.50 km south. (a) Use components to find the magnitude and direction of the resultant displacement of this professor. (b) Check the reasonableness of your answer with a graphical sum.