# 8.4b Vectors Continued: Applications

**Example 6** A man pushes a lawn mower with a force of 30 lb exerted at an angle of 42° to the ground. Find the horizontal and vertical components of the force.

**Example 7** A river flows due south at 3 mph. A swimmer attempting to cross the river heads due east swimming at 2 mph relative to the water. Find the true velocity of the swimmer as a vector. What is the swimmers actual speed?

**Example 8** A jet needs to maintain a bearing of N62°E with a speed of 375 mph. If the wind is blowing 55 mph in the direction N37°E find the speed and bering of the jet to maintain the desired course.

**Example 9** Two ropes suspend a 100-lb weight from the ceiling. The angle of depression on the right rope is 30°, and the angle of depression of the left rope is 50°. Find the tension in each rope.

**Example 10** Two ropes are used to suspend a 500 pound box from a ceiling. One rope is 30 feet long, the other is 20 feet long, and are anchored to the ceiling separated by a distance of 40 feet. Find the tension in each rope.