

Vectors

Find the magnitude of the resultant force and the angle between the resultant and each force.

1. Forces of 3 N and 8 N act at an angle of 90° to each other.

2. Forces of 4.2 N and 10.3 N act at an angle of 130° to each other.

Solve each problem.

3. The resultant of a 10-lb force and another force has a magnitude of 12.3 lb at an angle of 23.4° with the 10-lb force. Find the magnitude of the other force and the angle between the two forces.

4. Two draft horses are pulling on a tree stump with forces 200 pounds and 300 pounds with an angle of 65° between the forces. Find the resultant force.

5. Workers at the Audubon Zoo must move a giant tortoise to his new home. Find the amount of force to pull a 250-pound tortoise up a ramp leading into a truck. The angle of elevation of the ramp is 30° .

6. The heading of an executive's Lear jet has a bearing of 320° . The wind is 70 mph with a bearing of 190° . If the air speed of the plane is 400 mph, then find the drift angle (angle with respect to the air speed of the plane), the ground speed, and the course of the airplane.

7. Find the component form for a vector of magnitude 40 mph with direction angle 330° .