

**Analysis Honors
Vectors Worksheet #4**

Solve each of the following using vectors.

1. Two forces of 692 N and 423 N acts at a point. The resultant force is 786 N. Find the angle between the forces.

2. Three forces acting at a point are in equilibrium. The forces are 980 lbs, 760 lbs. and 1220 lbs. Find the angles between the forces (to the nearest minute)

3. A force of 176 lbs. Makes an angle of $78^{\circ}50'$ with a second force. The resultant of the two forces makes an angle of $41^{\circ}10'$ with the first force. Find the magnitude of the second force and the resultant.

4. A force of 28.7 lbs. makes an angle of $42^{\circ}10'$ with a second force. The resultant of the two forces makes an angle of $32^{\circ}40'$ with the first force. Find the magnitude and direction of the resultant.

5. A crate is supported by two ropes. One rope makes an angle of $46^{\circ}20'$ with horizontal and has a tension of 89.6 lbs. on it. The other rope is horizontal. Find the weight of the crate and the tension in the horizontal rope.

6. Two people are carrying a box, one on each side of the box. One person exerts a force of 150 lbs. at an angle of 62.4° with horizontal. The other person exerts a force 114 lbs. at an angle of 54.9° with horizontal. Find the weight of the box.

7. Two tugboats are pulling a disabled speed boat into port with forces of 1240 lbs. ad 1480 lbs. The angle between these forces is 28.2° . Find the direction and magnitude of the equilibrant.

Answers:

1. 93.92°	2. 91.92° , 141.49° , 126.6°	3. $F_2:189.59$ lbs, $r: 282.57^{\circ}$
4. 116.73 lbs	5. W: 64.8 lbs T: 61.9 lbs	6. 226.2 lbs
7. 2638.7 lbs at 167.2° , 1240 lbs at 164.6°		