Law of Cosines Word Problems

1. During a figure skating routine, Jackie and Peter skate apart with an angle of 15° between them. Jackie skates for 5 meters and Peter skates for 7 meters. How far apart are the skaters?

2. On a map, Orlando is 178 mm due south of Niagara Falls, Denver is 273 mm from Orlando, and Denver is 235 mm from Niagara Falls. Find the angle at Niagara Falls.

3. A bridge is supported by triangular braces. If the sides of each brace have lengths 63 feet, 46 feet, and 40 feet, find the measure of the angle opposite the 46 foot side.

4. To determine whether two interior walls meet at a right angle, carpenters often mark a point 3 feet from the corner on one wall and then a point 4 feet from the corner (at the same height) on the other wall. If the straight line distance between those points is exactly 5 feet, the walls are square. What angles do the walls meet at if the distance measures 5 feet 3 inches?