Trigonometry Problem:

Not far from the house is a hill in Wisconsin marked with a sign that says 7% grade. (A 7% grade means that if you travel 100 feet in a horizontal direction you will drop (or rise) 7 vertical feet.

Question 1. Is a 7% grade the same as a 7 degree grade? If not, what is the measure in degrees? (give answer in whole number of degrees)

Question 2. If the grade (roadway) is one-half mile (1 mile = 5280 feet) what is the difference, in height, between the top of the hill and the bottom?

(Hints): sketches are helpful in visualizing the problem. A knowledge of trigonometry is important. Keep in mind that the angle between vertical and horizontal is 90 degrees. Think of the roadway as the hypotenuse of a right triangle.