Monday cup #19- Solution

Problem

Question: **The cog railway at Pike's Peak (https://www.youtube.com/watch?v=aoLcEx9-BDo)
leaves the station in Manitou Springs at an altitude of 6,571 feet and climbs to an altitude of
14,110 feet at its summit. The average grade is 16 percent. Determine the total length of the track
from the station to the summit and compute the angle of elevation (using a 16% average grade).**

Solution to Problem:The total amount of track is 14,718 feet or 9.03 miles and the angle of elevation is 9.09
degrees.Since the vertical gain is 7,539 feet (found by subtracting 6,571 from 14,110), you can find the
horizontal distance (if it were thought of as a right triangle) by dividing .16 into it. So the horizontal change is
47,118 feet. Then using the Pythagorean Theorem, the total amount of track would be 47,718 feet or 9.03 miles
(the Pike's Peak website lists the actual amount of track as 8.9 miles and the average grade as 15%). The angle of
elevation is found by taking the inverse tangent of 0.16, which is 9.09 degrees.

There was no correct solution to problem 19

Rules

1. Anyone is eligible to participate. Each solution is to be the work of one individual without any input from faculty or others. An answer must be accompanied by appropriate justifications to be considered correct.
2. The solution is to be submitted with the solver's name, email, year in school (if applicable), local phone number, and local address. If you are submitting this for possible credit in a class, include your class number and instructors name.
3. The solution is to be typed or legibly written. Solutions must be submitted to the by 2 p.m. on the due date.
4. Entries will be graded on clarity of exposition and elegance of solution. An award of GEL10 will be given for the best correct solution. In

the case of a two-way tie, the award will be split. If there are more than two best solutions, a drawing will be held to determine two award winners.
5. Graduate students, faculty, and members of the general public are encouraged to submit solutions, but they will not be considered.

ორშაბათის თასი, кубок понедельника, **Monday cup, Coppa del lunedì, Coupe du lundi**
Solution for this problem can be submitted proveweek@gmail.com