Pre-Lab Practice: Motion on an Incline

Review the Textbook:

- *PHYS 1401: Serway & Vuille: Chap 4, Examples 4.7 - 4.9.*
- *PHYS 2425: Serway & Jewett: Chap 5, Example 5.6.*

A suitcase of 50.0 kg is pulled with a force of 900N at an angle of 10.0º above the horizontal over a frictionless surface.

1. What is the vertical component of the applied (pulling) force?
   (156 N)

2. What is the horizontal component of the applied force?
   (886 N)

3. What is the magnitude of the normal force exerted by the ground?
   (334 N)

Consider a 3.0-kg box placed on a frictionless slope of 25°.

4. What is the magnitude of the net force exerted on the box?
   (12.4N)

5. As the box slides down the slope, what is the acceleration of the box?
   ($4.15 \frac{m}{s^2}$)

6. How the angle of the slope needs to be adjusted to reduce the acceleration of the box to $1 \frac{m}{s^2}$?
   (the angle needs to be reduced to 5.9°)

7. A slope that is 0.64 meters long was adjusted such that one end is 2cm above the other as shown in Figure 4. What is the angle of the slope?
   (1.8^o)

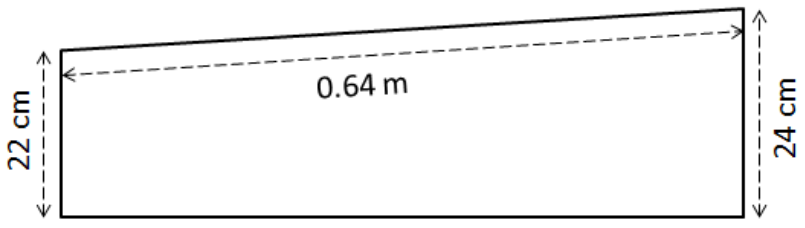

Figure 4. Ramp measurements of the slope.