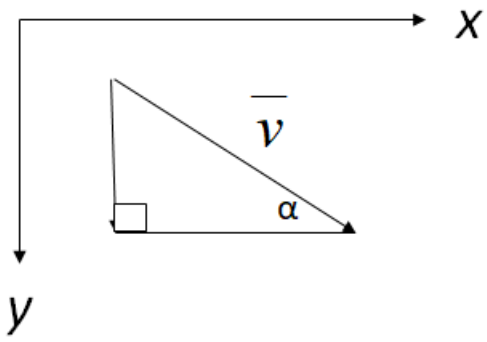
Answer on Question #84923 – Physics – Mechanics | Relativity

Task:

When rolled down a mountainside at 8.0 m/s, the vertical component of its velocity vector was 2.0 m/s. What was the angle of the mountain surface above the horizontal?

Solution:

Graphic image of the task:



$$\left|\overline{v}\right| = 8 \ m/s$$

$$\left|\overline{v_y}\right| = 2 \ m/s$$

$$\alpha = \arcsin\left(\frac{\left|\overline{v_y}\right|}{\left|\overline{v}\right|}\right) = \arcsin(0.25) = 14.5^o$$

Answer: 14.5°