Answer on Question #72083 Physics / Other

Two mountains are at a distance of d from each other. In any place between them a man fired a gun. He heard the 1st echo at t_1 sec and second echo at t_2 sec. What is the velocity of sound?

Solution:

Let v is a sound velocity, l is a distance between the 1st mountain and man. So

$$t_1 = \frac{2l}{v},$$

$$t_2 = \frac{2(d-l)}{v}.$$

Thus

$$t_1 + t_2 = \frac{2l}{v} + \frac{2(d-l)}{v} = \frac{2d}{v}.$$

Finally, the velocity if speed

$$v = \frac{2d}{t_1 + t_2}.$$

Answer: $\frac{2d}{t_1+t_2}$.