Answer on Question #68437, Physics / Mechanics | Relativity

Question:

A stone is left into the well from the top of the well. The height of the well is H meter. If V is the velocity of the sound and N is the time when sound is heard, then what is the value of N?

Solution:

First, the stone must reach the bottom of the well. It's a free fall and therefore the distance $H = \frac{g\tau^2}{2}$, where g is the acceleration of gravity (9.81 m/s^2) and τ — the time of free falling.

Then the sound wave returns to the observer after the time $t = \frac{H}{V}$.

Total time $N = \tau + t = \sqrt{\frac{2H}{g}} + \frac{H}{V}$.

Answer:

$$\sqrt{\frac{2H}{g}} + \frac{H}{V}$$

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