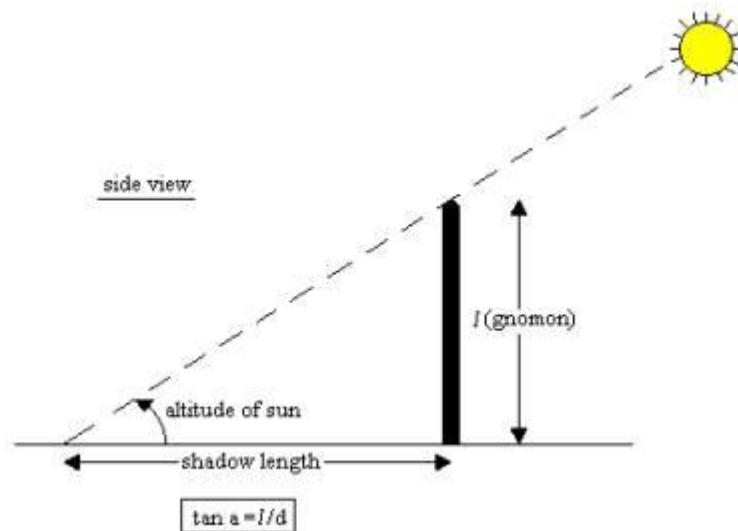


Answer on Question #50134, Physics, Mechanics | Kinematics | Dynamics

Suppose, you live in a place on the equator. There is a vertical rod of length 2m on your roof top. One morning, you went to the roof top and observed the shadow of the rod. If the length of the shadow was 1m, then what time was that?

Solution:



On the Equator, the duration of daylight is not exactly 12 hours all the year round. At 0° we have 6 a.m., at 90° – 12 p.m.

The altitude of the sun is

$$\alpha = \tan^{-1}\left(\frac{2}{1}\right) = 63.43^\circ$$

The time is

$$t = 6 + \frac{63.43}{90} * 6 = 10.23 \text{ a. m.} = 10:14 \text{ a. m.}$$

Answer: 10:14 a.m.