Instantaneous Speed

Earlier, we defined ***Average speed:*** between times t_i and t_f:

$$\vec{v} = \frac{d}{\Delta t}$$

d $\longrightarrow$ Distance traveled

$\Delta t = t_f - t_i$ $\longrightarrow$ Travel time

Instantaneous speed tells you how fast an object moves *right now*, at specific time t. The formula is the same as above, but Δ**t must be as small as possible.**

In science, the Greek letter Δ usually represents the change or difference of a quantity. For example, Δt would represent the change in time between two events.

Homework 4

Problem 1

A Lion rest under a palm tree somewhere near the Earth's equator. Find the speed of the Lion due to the Earth's spin about its axis. Express the result in m/s, using scientific notation. Assume that the circumference of the Earth is C=40,000km.

Problem 2.

The figure below shows the position of a sloth crawling back and forth along a straight line. Find its instantaneous speed at each time interval and fill the table on the right. Also, find the average speed of the sloth (you'll need to figure out the total distance travelled for this).
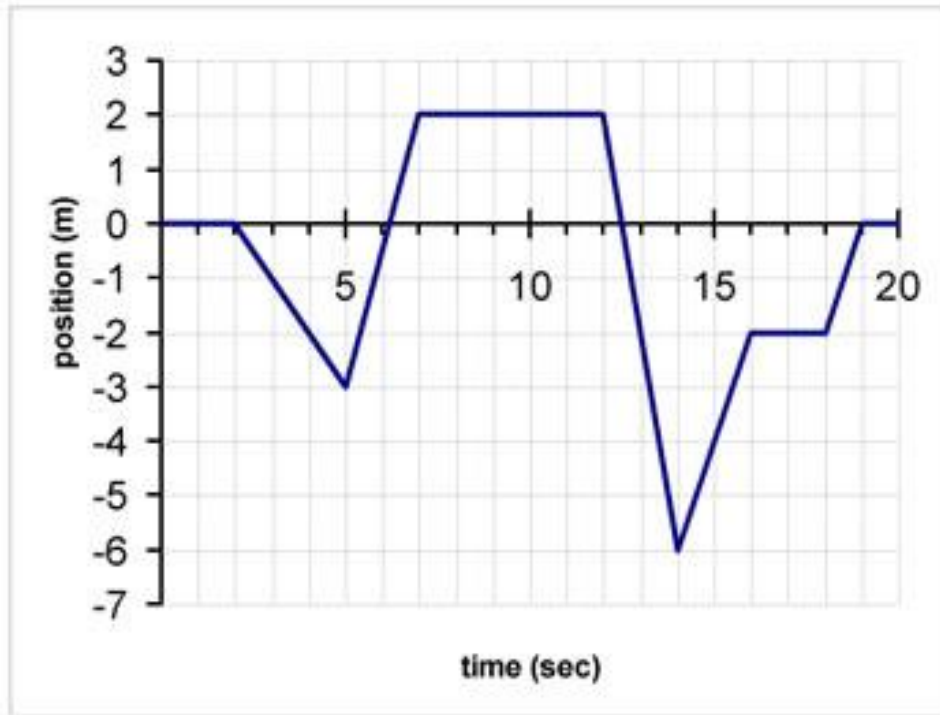
Time interval ,s	Speed, m/s
0-2	
2-5	
5-7	
7-12	
12-14	
14-16	
16-18	
18-19	
19-20	
Average (0-20)	