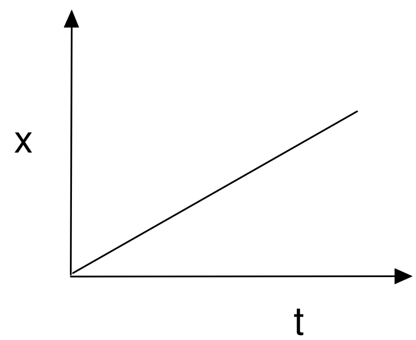
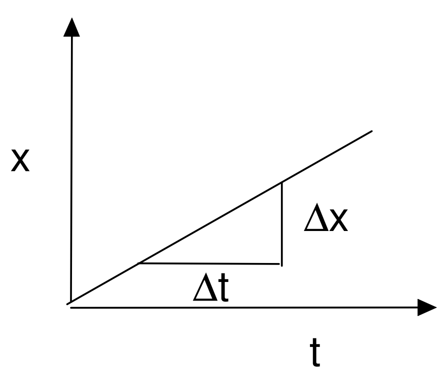
The position versus time graph for Buggy Car Lab was a straight line.

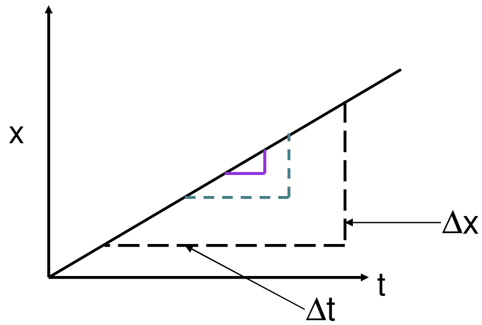


Slope of a Position-Time Graph = Average Velocity



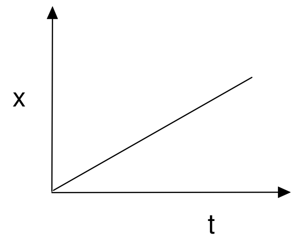
Slope = $\frac{\Delta x}{\Delta t}$

Since the relationship is a straight line, any 2 points may be used to find the slope.

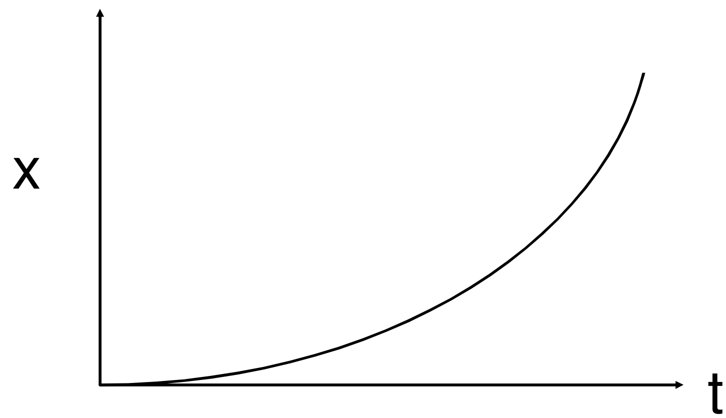


This average velocity...
is the same as
this average velocity...
is the same as
this average velocity

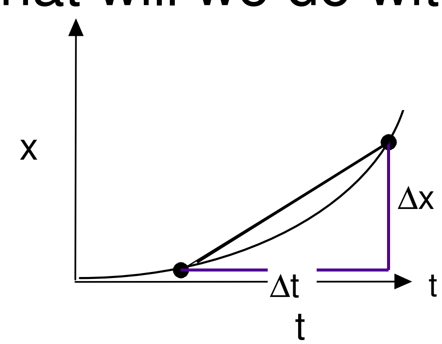
So the average velocity equals the velocity for <u>any</u> time interval if the position-time graph is a straight line.



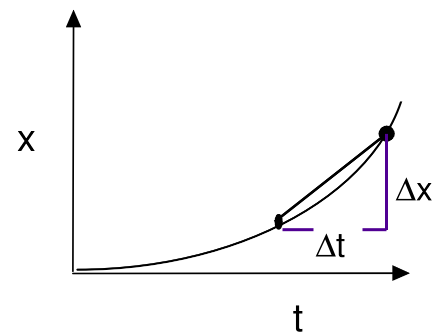
This is a position vs. time graph from the Inclined Plane Lab.



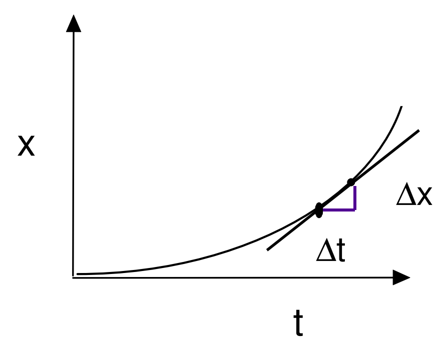
If the average velocity is determined by calculating the slope of the position vs. time graph, what will we do with this curve?



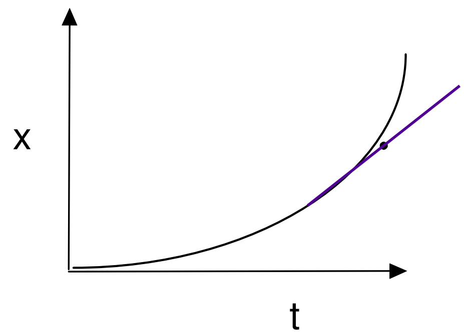
Choose a smaller interval. How does the slope match the motion?



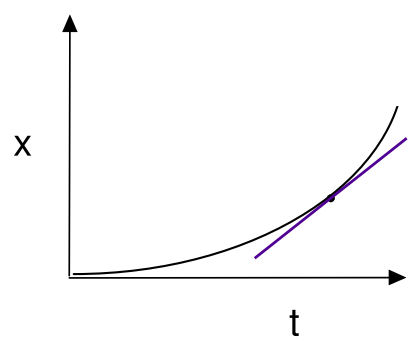
Choose an even smaller interval. This gives you the average Velocity over a smaller time Interval.



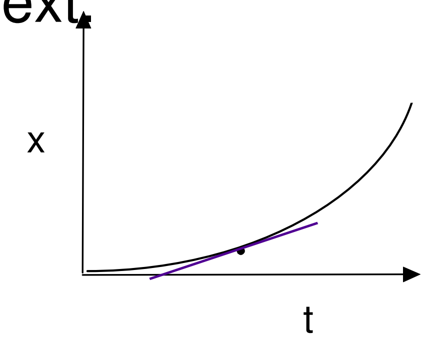
You probably remember from math class that the best match for the slope of any part of a curve is the slope of the tangent to the curve at that point on the curve.



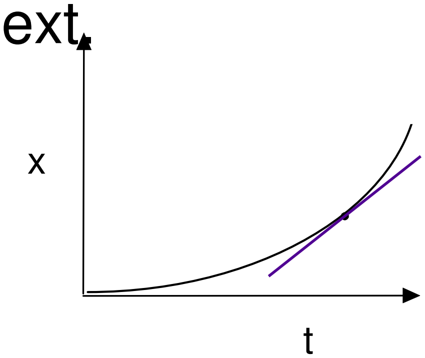
What does the slope of this tangent tell us?
Velocity at that instant!!!!



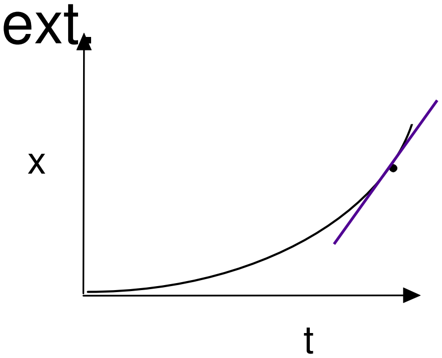
The slope of the tangent, instantaneous velocity, changes from one clock reading to the next.



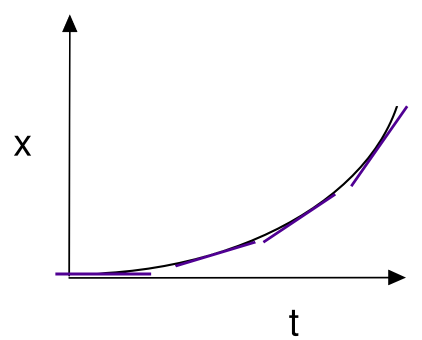
The slope of the tangent, instantaneous velocity, changes from one clock reading to the next.



The slope of the tangent, instantaneous velocity, changes from one clock reading to the next.



We can determine the instantaneous velocities at several clock readings...



and use those velocities to plot a velocity versus time graph for that motion.

Choose up to 8 points and graph them on a velocity vs. time graph