MA 181 The Velocity Problem

Section 2.1

1. Suppose that an object is traveling horizontally along a straight line. Table 1 below gives the distance it has traveled at time t.

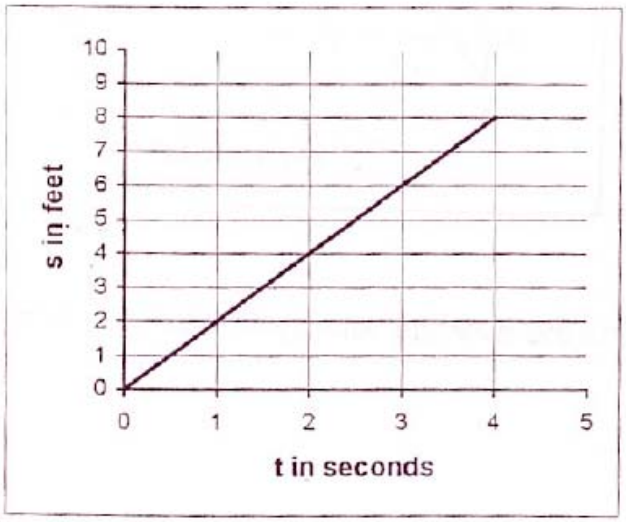
Table 1

time t (in seconds)	0	1	2	3	4
distance s (in feet)	0	2	4	6	8

(a) Is this object traveling at the same velocity throughout the time period? How do you know?

(b) What is the velocity of the object at any time t in the given time period?

(c) The data is plotted below.



(d) What characteristic of the graph corresponds to the velocity of the object?

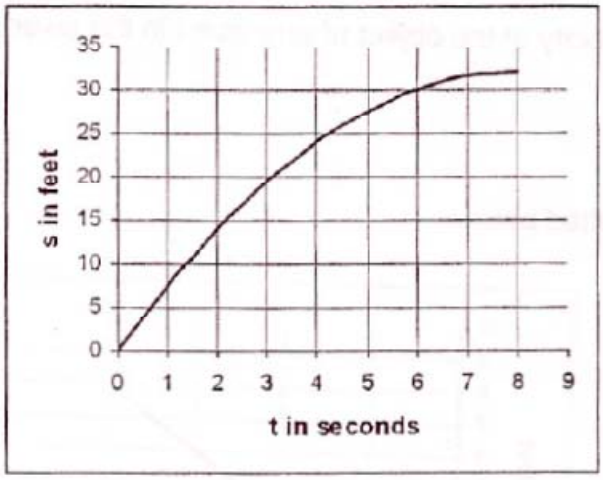
2. A second object is also traveling horizontally along a straight line. Table 2 below gives the distance it has traveled at time t.

Table 2

time t (in seconds)	0	1	2	3	4	5	6	7	8
distance s (in feet)	0	7.5	14	19.5	24	27.5	30	31.5	32

(a) Is this object traveling at the same velocity throughout the time period? How do you know? If the velocity is not the same, is it increasing or decreasing?

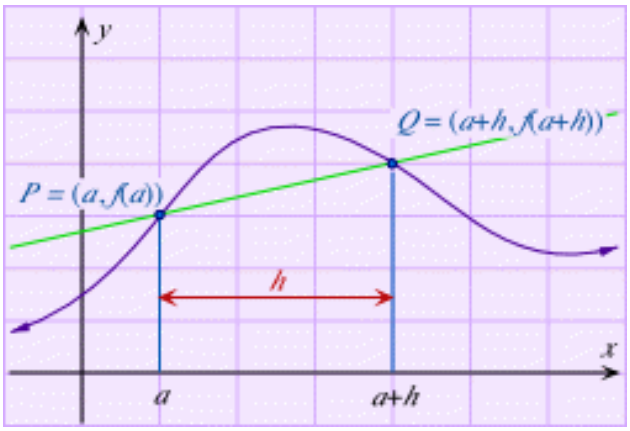
(b) The data is plotted below.

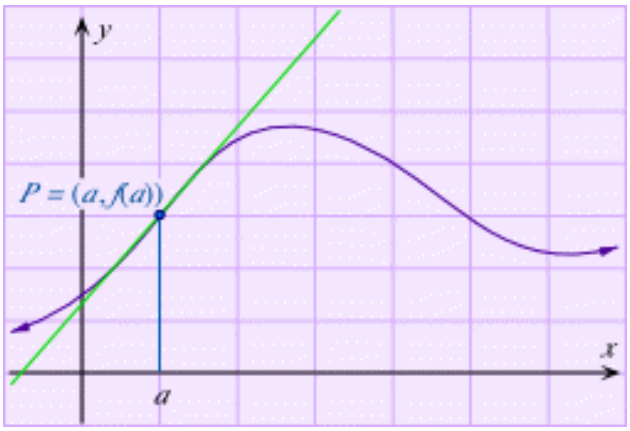


(c) Determine the average velocity of the object from t = 3 to t = 4.

(d) How can you show this on the graph? Think about the connection between velocity and the graph in the previous example.

(e) How could we use the graph to visualize the velocity of the object during the time interval t = 3 to t = 3.5? What about ***at*** t = 3?





Slope of Secant Line	***Slope of tangent line***

http://www.zweigmedia.com/RealWorld/tutorials/frames2_3.html