

1. Below are data on the growth of a golden retriever puppy

Age (weeks)	Weight (kg)
0	1.5
1	2.2
2	2.7
4	3.4
7	5.5
10	9.4
15	14.5
20	27.1
25	31.2
30	33.1
40	36.4
50	37.6

a. Find the weekly growth rate between weeks 7 and 10 (in kgs/week). Also, find the average growth rate between weeks 0 and 40.

b. On separate paper sketch a graph of the weight as a function of number of weeks, then graph the rate of weekly growth as a function of the age. You will see that the maximum rate of growth occurs where the graph of the weight as a function of age is steepest. Between what weeks in the table is the growth rate at a maximum? And what is the maximum growth rate for this puppy?

2. A ball is thrown vertically in the air and satisfies the equation

$$h(t) = 1700t - 490t^2,$$

where t is in seconds and $h(t)$ is in cm.

a. Find the time when the ball reaches its maximum height and what that maximum height is. At what time does the ball hit the ground?

b. The average velocity is the difference in heights divided by the time between the measurements. Find the average velocity in cm/sec between $t = 1$ and $t = 2.$, also between $t = 1$ and $t = 1.1$, and between $t = 1$ and $t = 1.001$.