

Quiz #2 Solutions

37)

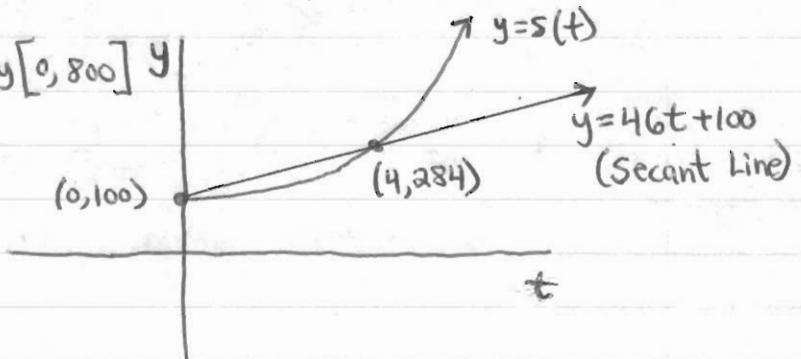
time (hr)	0	1	2	3	4	5
distance (km)	100	131	168	217	284	375

$$S(t) = t^3 + 30t + 100$$

38) average velocity between $t=1$ and $t=5$ = $\frac{S(5) - S(1)}{5 - 1} = \frac{375 - 131}{4} = 61 \text{ km/hr}$

39) avg. Velocity between $t=0$ and $t=4$ = $\frac{S(4) - S(0)}{4 - 0} = \frac{284 - 100}{4} = 46 \text{ km/hr}$

window = $[0, 10]$ by $[0, 800]$ y



40) The graph of the function $y = s(t)$ appears to "straighten" out as you zoom in on the point $(3, 217)$.

41) $\frac{S(3) - S(2.999)}{3 - 2.999} = 56.991001$

The arrow points from the previous equation to this one, indicating they are related. The text states: "The average of these two is 57.000001 which is the approximate velocity at $t=3$ ".

$$\frac{S(3.001) - S(3)}{3.001 - 3} = 57.009001$$

The "actual" or instantaneous velocity at $t=3$ is 57 km/hr .