9. (9 pts) Below is a table of values for the velocity of a downhill skier.

t (seconds)	0	1.5	3	4.5	6	7.5	9	10.5
$v(t)$ (meters/second)	4	19	25	28	31	33	33	32

Calculate or estimate each of the quantities below. **Include units.**

a) (2 pts) The skier's instantaneous velocity at $t = 6$.

$v(6) = 31$ meters/second

b) (3 pts) The distance traveled by the skier in the first 4.5 seconds.

$1.5 \times 4 + 1.5 \times 19 + 1.5 \times 25$

$\approx 6 + 28.5 + 37.5 = 72$ meters.

c) (2 pts) The skier's instantaneous acceleration at time $t = 4.5$.

$$a(4.5) \approx \frac{v(6) - v(4.5)}{1.5} = \frac{31 - 28}{1.5} = 2.$$

(units = meters/sec^2)

d) (2 pts) The skier's average acceleration over the first 4.5 seconds.

$$\text{Average acceleration} = \frac{v(4.5) - v(0)}{4.5}$$

$$= \frac{28 - 4}{4.5}$$

$$= \frac{24}{4.5} = 5.33 \text{ meters/sec}^2.$$