

→ WEBSTE REV

1) The graph of the velocity of Alge-bro on the x-axis is given. Alge-bro starts at  $x = 4$  when  $t = 0$ .

a) What is the velocity of Alge-bro at  $t = 1$  s?

$1 \text{ m/s}$

b) Find the position of Alge-bro at  $t = 2$  s.

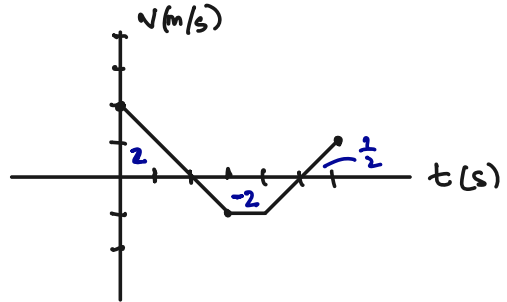
Initial + Change  
 $4 + \int_0^2 2 = 6 \text{ m}$

c) Find the position of Alge-bro at  $t = 6$  s.

Initial  
 $\int_0^6 \rightarrow 2 + -2 + \frac{1}{2} + 4 = 4\frac{1}{2} \text{ m}$

d) Find the total distance traveled by Alge-bro.

Initial  
 $|2| + |-2| + |\frac{1}{2}| + 4 = 4\frac{1}{2} + 4 = 8\frac{1}{2} \text{ m}$

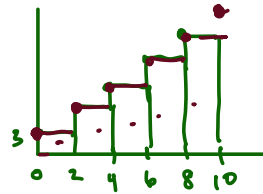


2) The data for the acceleration  $a(t)$  of a UPS driver (M. Saba) from 0 to 10 seconds are given in the table. If the velocity at  $t = 0$  is 2 ft/s, approximate the velocity at  $t = 10$  seconds using:

$t$ (s)	0	2	4	6	8	10
$a(t)$	3	5	6	8	10	15

a) Left hand rule with  $n = 5$  rectangles

Initial  $\Delta x = \frac{b-a}{n}$   
 $\Delta x = \frac{10-0}{5} = 2$   
 $\Delta x = 2$   
 Initial +  $\Sigma$  rect  
 $2 + [2 \cdot 3 + 2 \cdot 5 + 2 \cdot 6 + 2 \cdot 8 + 2 \cdot 10]$   
 $2 + 66 = 68 \text{ ft}$



b) Trapezoid rule with  $n = 5$  trapezoids

$\Delta x = 2$   
 $A = \frac{1}{2} h (b_1 + b_2)$   
 Initial +  $A = \Sigma$  trap  
 Initial + Change  
 $= \frac{1}{2} (2) [f(0) + 2f(2) + 2f(4) + 2f(6) + 2f(8) + f(10)]$   
 $\frac{1}{2} (2) [3 + 2(5) + 2(6) + 2(8) + 2(10) + 15]$   
 $2 + 76 = 78 \text{ ft}$

