

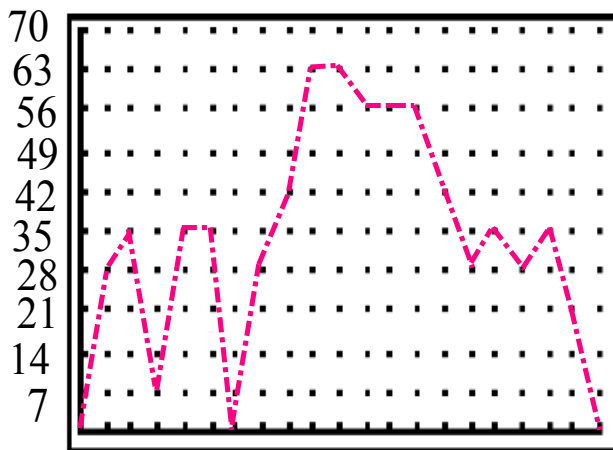
Goals

Students will be able to ...

- Use RAM to estimate the area under a curve.
- Use RAM to estimate the distance traveled.

Time	0	1	2	3	4	5	6
Speed	0	28	35	7	35	35	0
Time	7	8	9	10	11	12	13
Speed	28	42	63	63	56	56	56
Time	14	15	16	17	18	19	20
Speed	42	28	35	28	35	21	0

Plot your results on the grid below. Label the axes with the appropriate unit dimension. Let each horizontal unit be 1 minute and each vertical unit equal 7 mph.



What does the area under the graph represent?

- Distance the car traveled in 20 minutes.

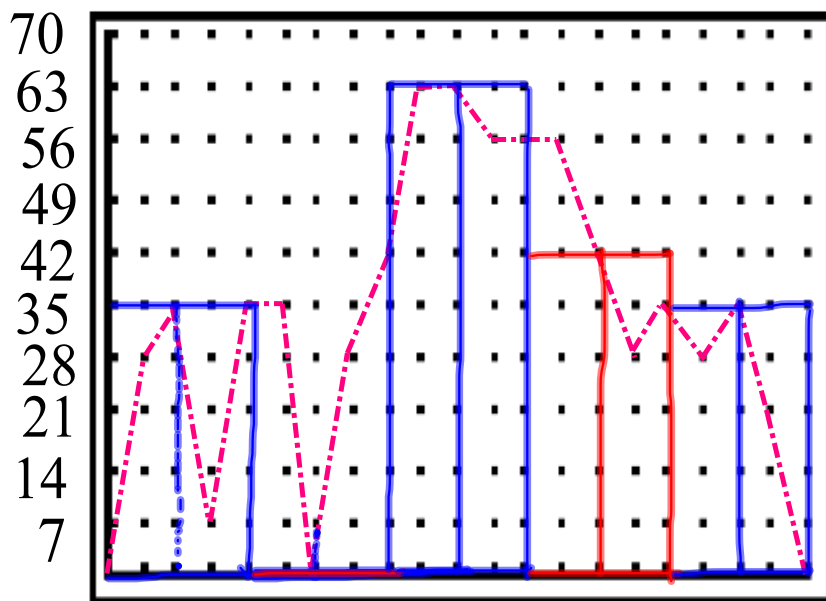
4) Five Riemann Sums with left hand values

$$\Delta x = \frac{4}{60}$$

$$\frac{4}{60} [f(0) + f(4) + f(8) + f(12) + f(16)]$$

5) Five Riemann Sums with right hand values

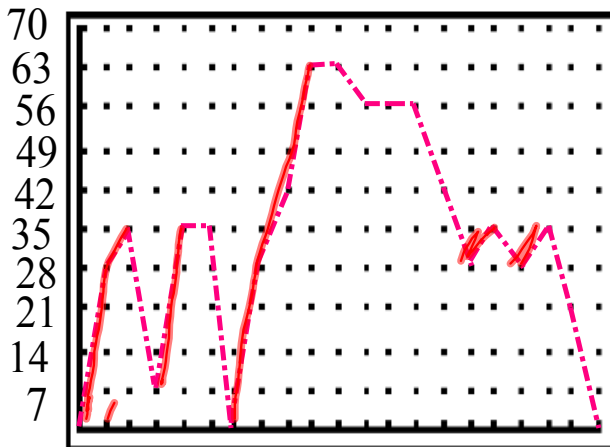
$$\frac{4}{60} [f(4) + f(8) + f(12) + f(16) + f(20)]$$



Midpoint (RAM)

Time	0	1	2	3	4	5	6
Speed	0	28	35	7	35	35	0
Time	7	8	9	10	11	12	13
Speed	28	42	63	63	56	56	56
Time	14	15	16	17	18	19	20
Speed	42	28	35	28	35	21	0

Plot your results on the grid below. Label the axes with the appropriate unit dimension. Let each horizontal unit be 1 minute and each vertical unit equal 7 mph.

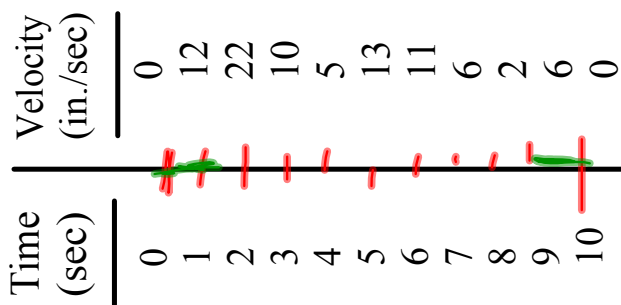


- 6) What was the average speed over the 20 minutes?
- 7) Over what intervals did the velocity increase?
(0, 2) (3, 4) (6, 10) (15, 16) (17, 18)
- 8) Over what intervals was the acceleration negative?
v(t) is decreasing
- 9) Over what intervals did the velocity decrease?

Approximatin Distance Traveled

p255 #10

Estimate the distance traveled by the engine, using
10 subintervals of length 1 with
a) left-endpoint values (LRAM)



Assignment
p254: 1, 2, 6, 9

RAM (Rectangular Approximation Method) -

Riemann Sums

$$\sum_{k=1}^n f(x_k) \Delta x_k \dots$$

RRAM

LRAM

MRAM