

AP Calculus
4.7 – Approximating Area Using Trapezoids

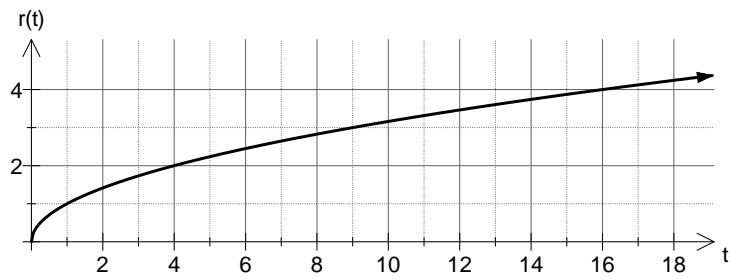
1. The table below shows the speedometer readings of a car at several time intervals over $0 \leq t \leq 5$ hours.

t (hr)	0	1	2	3	4	5
$v(t)$ (miles/hr)	0	40	30	50	40	70

Estimate the value of $\int_0^5 v(t) dt$ using five trapezoids. Use correct units for the answer and interpret your answer.

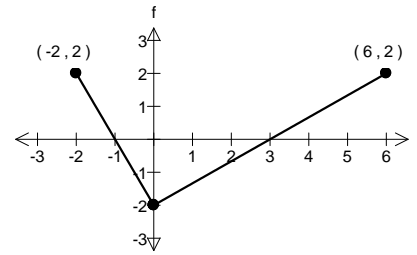
2. People are leaving a concert at a rate of $r(t) = 200 - 4t$ people per minute, where $0 \leq t \leq 9$. Use the trapezoidal method to approximate the total number of people that left in the first 6 minutes.

3. The graph shows the number of cars passing a junction per hour. Estimate the total number of cars that drove past the junction in the first 16 hours using four trapezoids.



4. The graph of the function f shown below consists of two line segments. Let g be the function given by

$$g(x) = \int_0^x f(t) dt. \text{ Determine the following:}$$



a. $g(3)$

b. $g(-2)$

c. $g'(3)$

d. x -coordinates of local max and min of $g(x)$. Justify your answer.

e. Value of the absolute minimum of $g(x)$. Justify your answer.

f. Intervals of increase of $g(x)$. Justify your answer.

g. Intervals of where $g(x)$ is CU. Justify your answer.

h. Sketch a possible graph of $g(x)$.

