

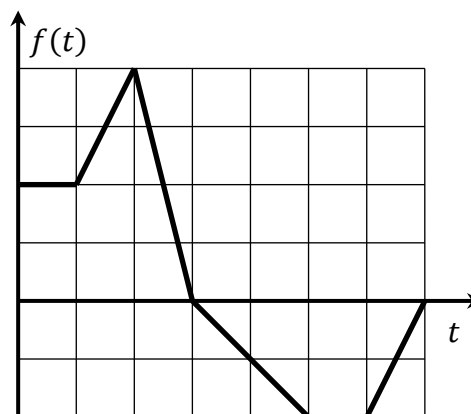
Handout: Area Function (Stewart Section 5.4)

The graph of $f(t)$ is shown at right.

The function $g(x)$ defined by the equation

$$g(x) = \int_{t=0}^{t=x} f(t)dt$$

is an *area function* for f .



Part 1: The first goal is to build a graph of $g(x)$.

On the back of this page are eight copies of the graph of $f(t)$.

(a) Using these graphs, make eight pictures that illustrate the quantity

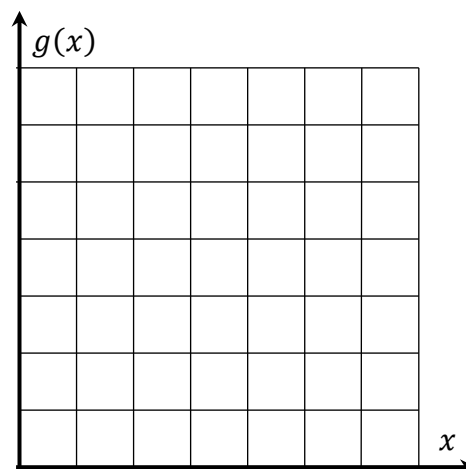
$$g(x) = \int_{t=0}^{t=x} f(t)dt$$

for the eight x values $x = 0, 1, 2, 3, 4, 5, 6, 7$

(b) Using the pictures, find the value of $g(x)$ for $x = 0, 1, 2, 3, 4, 5, 6, 7$ and write those values in the table at right.

x	$g(x)$
0	
1	
2	
3	
4	
5	
6	
7	

(c) Using the data from your table, make a graph of $g(x)$ on the interval $0 \leq x \leq 7$.



Part 2: Questions to be answered **without** using your graph from **Part 1**.

(d) What is the value of $g'(2)$?

(e) What is the value of $g'(5)$?

(f) At what x value does g have a local max?

