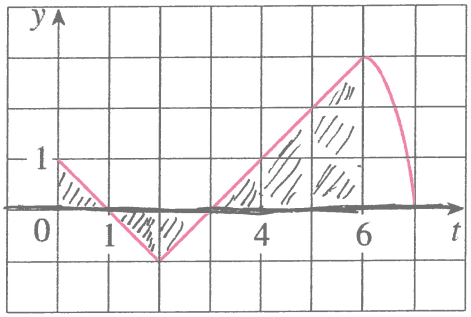
Let $g(x) = \int_0^x f(t)\,dt$, where f is the function whose graph is shown.



(a) Evaluate $g(x)$ for $x = 0, 1, 2, 3, 4, 5$, and 6.
(b) Estimate $g(7)$.
(c) Where does g have a maximum value? Where does it have a minimum value?
(d) Sketch a rough graph of g.

a)

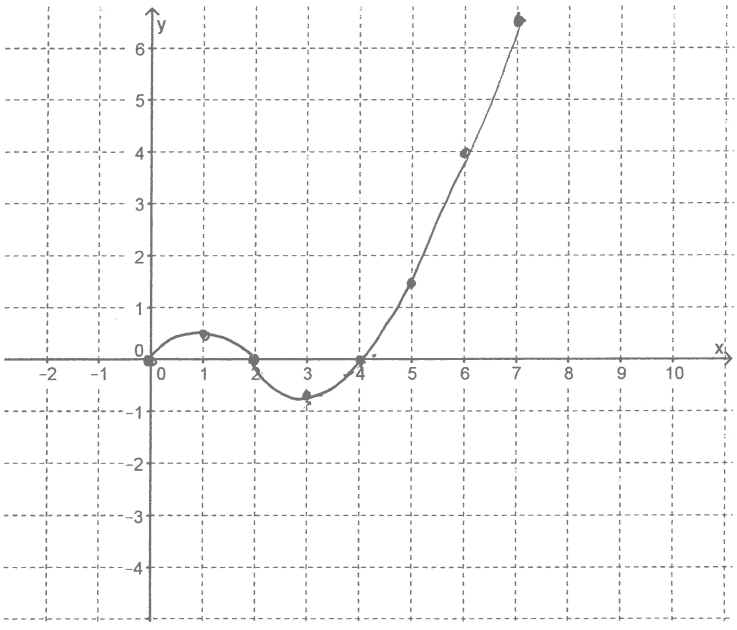
x	0	1	2	3	4	5	6
$g(x)$	0	.5	0	-.5	0	1.5	4

b) $g(7) \approx 6.5$

c) g is maximum at x = 7 accumulated the most area

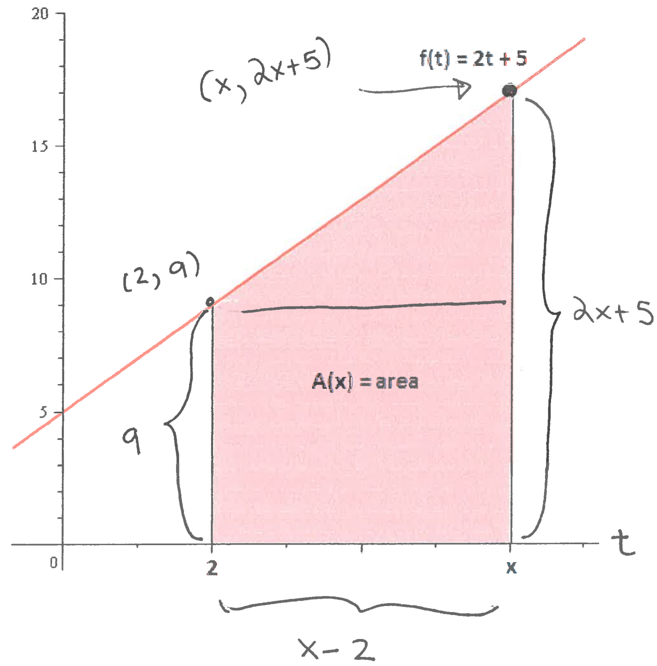
g is minimum at x = 3 subtracted the most area

d)



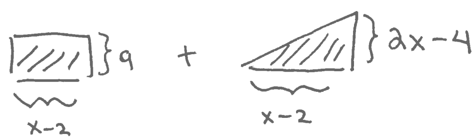
a) Find an integral expression for the area function $A(x)$.

$$A(x) = \int_2^x 2t + 5\,dt$$



b) Use geometry to find an algebraic expression for the area function.

$A(x) =$



$$= 9(x-2) + \tfrac{1}{2}(x-2)(2x-4)$$

$$= 9x - 18 + \tfrac{1}{2}(2x^2 - 8x + 8) = 9x - 18 + x^2 - 4x + 4$$

$$= x^2 + 5x - 14$$

c) Compute the derivative of $A(x)$.

$$A'(x) = 2x + 5$$

d) What do you notice about $A'(x)$ and $f(x)$?

$$A'(x) = f(x)$$

$$f(t) = 2t + 5$$

$$f(x) = 2x + 5$$