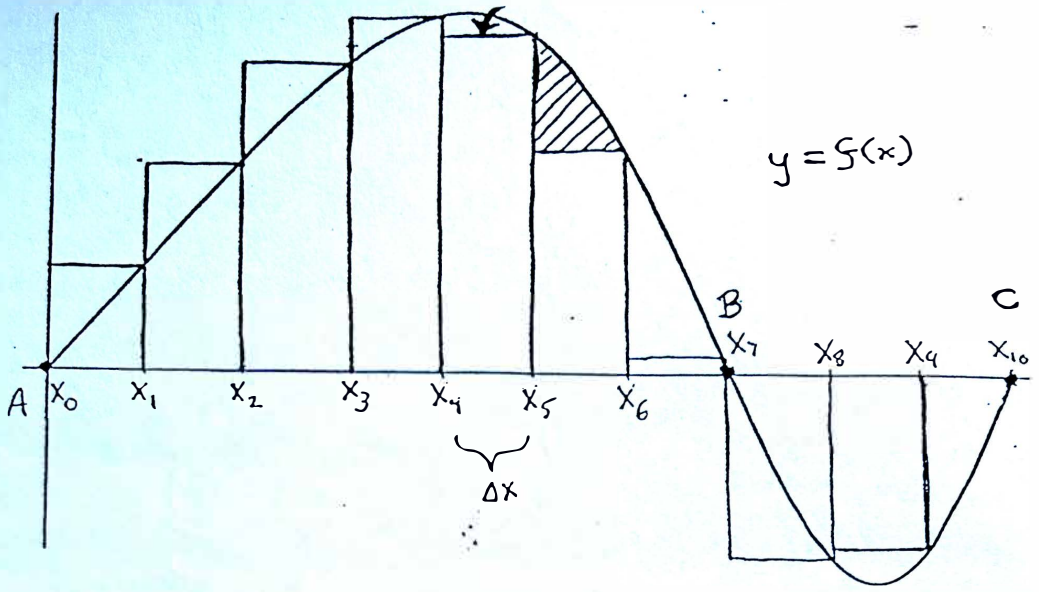
3.

In each of the parts below *circle* the correct answer or *fill in* the blank.



(i) The sketch above represents a Riemann sum using

Left endpoints **Right endpoints** Midpoints .

(ii) What is the height of the box above marked with an arrow?

$f(x)$ $F(x)$ $f(x_5 + a)$ **$f(x_5)$** $f_5(x)$ none of these

(iii) What is the area of the box from part (ii) ? $f(x_5)\Delta x$

(iv) The Riemann sum shown above is represented in summation notation by

$\sum_{n=1}^{\infty} f(c) - f(a)$ $\sum_{i=0}^{10} f(x_i)\Delta x$ **$\sum_{i=1}^{10} f(x_i)\Delta x$** $\sum_{i=0}^{9} f(x_i)\Delta x$ $\sum_{i=0}^{10} f(\Delta x)x_i$

(v) The average value of $f(x)$ over $[A, C]$ is

$\frac{\int_A^C f(x)\,dx}{C-A}$ $\frac{\int_A^B f(x)\,dx + \left|\int_A^C f(x)\,dx\right|}{C-A}$ $\frac{\int_A^B f(x)\,dx}{10}$ none of these

(vi) The exact area of the shaded region is

$\frac{(f(B)-f(A))\Delta x}{10}$ $(f(x_6) - f(x_5)\Delta x)$ **$\int_{x_5}^{x_6} (f(x) - f(x_6))\,dx$** none of these

(vii) How does $\int_A^C f(x)\,dx$ compare to $\int_A^B f(x)\,dx$?

$\int_A^C f(x)\,dx$ $<$ **$>$** $=$ $\int_A^B f(x)\,dx$

circle one

7. Let $f(t) = t^2$ be the speed of a runner after t seconds. Match the equal quantities.

a) Distance traveled between 5 seconds and 15 seconds C

b) Total distance traveled after 15 seconds E

c) A function showing total distance traveled at any second B

d) The derivative of $\int_0^x t^2 dt$ A

e) An anti-derivative of $\int_0^x t^2 dt$ F

A. x^2

B. $\int_0^x t^2 dt$

C. $\int_5^{15} t^2 dt$

D. $2x$

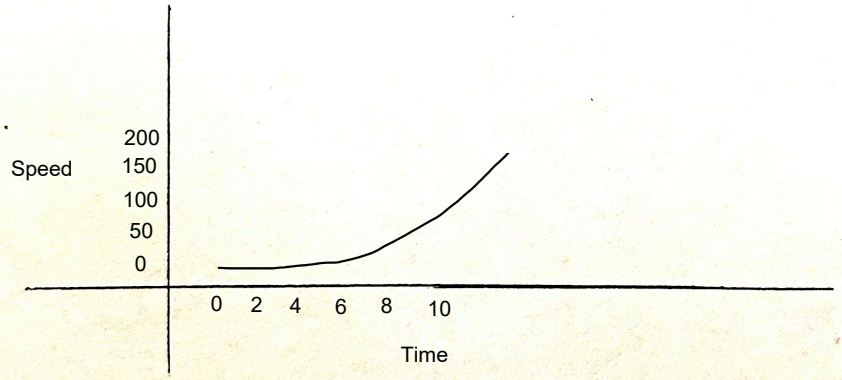
E. $\int_0^{15} t^2 dt$

F. $\frac{x^4}{12}$

G. $\int_1^{15} t^2 dt$

H. $\int_x^{15} t^2 dt$

Sketch a graph of the runner's speed at time t.



Sketch the graph of the distance traveled by the runner at time t.