

# Chapter 7 - Spring 2021 - Numerical Integration - Part 1

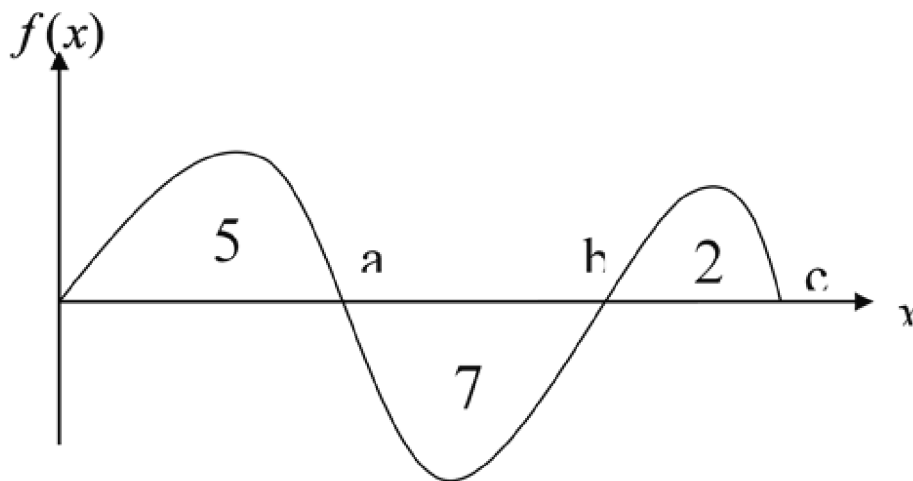
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1

Given the  $f(x)$  vs  $x$  curve, and the magnitude of the areas

as shown, the value of  $\int_0^b f(x) dx$



The value must be a number

2

Question

The exact mean value of the function  $f(x)$  from  $a$  to  $b$  is

(A)  $\frac{f(a)+f(b)}{2}$

(B)  $\frac{f(a)+2f\left(\frac{a+b}{2}\right)+f(b)}{4}$

(C)  $\int_a^b f(x)dx$

(D)  $\frac{\int_a^b f(x)dx}{(b-a)}$

- ☐ Correct choice is A
- ☐ Correct choice is B
- ☐ Correct Choice is C
- ☐ Correct Choice is D

3

In 9-segment Trapezoidal rule, the number of points at which the function is evaluated is

- ☐ 8
- ☐ 9
- ☐ 10
- ☐ 18

4

Enumerate three different ways you can integrate a discrete function.

Enter your answer

5

The distance covered by a rocket from  $t=8$  to  $t=34$  seconds is calculated using the multiple segment trapezoidal rule by integrating a velocity function. Below is given the estimated distance for the different number of segments,  $n$ .

$n$	1	2	3	4	5
Value	16520	15421	15212	15138	15104

The number of significant digits at least correct in the answer for  $n=5$  is

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4

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