

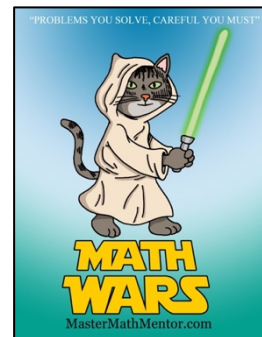
Math Wars – AB Calculus

Topic 127 – Riemann Sums



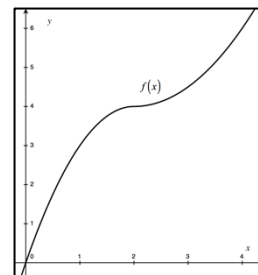
Maximum Time: 8 Minutes

Directions: To start, you need to download the Math Wars application on your cell phone: Use the QR code or the url: <https://mastermathmentor.com/mmm/mathwars.ashx?key=127>



When ready, start the timer and then solve the problems below, entering your choice, A, B, C, D and pressing **Submit** for each problem when you are sure of your answer. When complete, stop the timer. You will see problems you got correct in green and incorrect in red. You will receive a score based on how many problems you got right and your time. A perfect score is all problems correct using half the maximum time or less. You can text or email your friends with your results.

1. (1 pt) The graph of $f(x)$ is shown to the right. Approximations to $\int_0^4 f(x) dx$ are made using left Riemann sums (L), right Riemann sums (R), and trapezoids (T), each using 4 subintervals of equal width. Arrange the calculations from smallest to largest.



- A. L-T-R
B. L-R-T
C. R-T-L
D. R-L-T

2. (3 pts) The function $f(x)$ is continuous on the interval $[-8, 4]$. Selected

x	-8	-5	-2	1	4
$f(x)$	-6	-8	-3	4	-2

values of x and $f(x)$ are given in the table below. If $\int_{-8}^4 f(x) dx$ is

approximated with left Riemann sums with 4 equal subintervals, right Riemann sums with 4 equal subintervals, 4 trapezoids with 4 equal subintervals, and 2 midpoint rectangles with 2 equal subintervals, what is the difference between the largest and smallest approximation?

- A. 6
B. 9
C. 12
D. 15

3. (5 pts) $\frac{1}{10} \left(\frac{1}{e^5} + \frac{2}{e^{5.1}} + \frac{2}{e^{5.2}} + \dots + \frac{2}{e^{9.9}} + \frac{1}{e^{10}} \right)$ is an approximation for

- A. $\frac{1}{2} \int_5^{10} \frac{1}{e^x} dx$
B. $\frac{1}{10} \int_0^5 \frac{1}{e^{x+5}} dx$
C. $2 \int_5^{10} \frac{1}{e^x} dx$
D. $\int_5^{10} \frac{1}{e^x} dx$

4. (7 pts) The function f is continuous on the closed interval $[-10, 10]$ and has the values given in the table. The

trapezoidal approximation for $\int_{-11}^9 f(x) dx$, found with 5 subintervals, is

x	-11	-7	-3	1	5	9
$f(x)$	-4	k	3	$k+1$	$2k$	16

zero. Find the trapezoidal approximation for $\int_1^9 f(x) dx$, found with 2 subintervals.

A. -12

B. 4

C. 9

D. 19

5. (9 pts) A function r passes through the following points. Which of the

following cannot be a midpoint approximation to $\int_1^{13} r(x) dx$?

x	1	3	5	6	8	9	11	13
$r(x)$	1	2	3	4	5	6	7	8

A. 44

B. 48

C. 52

D. 56