

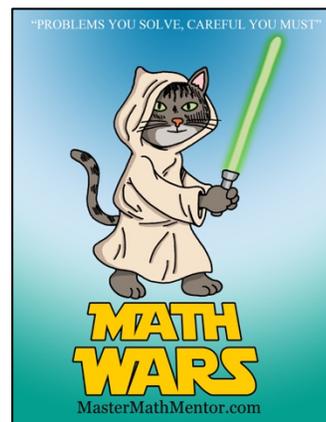
Math Wars – AB Calculus

Scrambled 183 – Integrals and Applications

Maximum Time: 8.25 Minutes

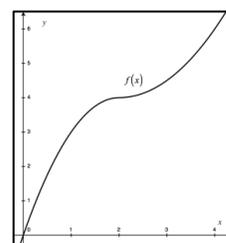


Directions: To start, you need to download the Math Wars application on your cell phone: Use the QR code or the url: <https://mastermathmentor.com/mmm/mathwars.ashx?key=183>

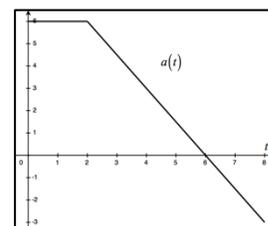


When ready, start the timer and then solve the problems below, entering your choice, A, B, C, D and pressing for each problem when you are sure of your answer. When complete, stop the timer. You will see problems you got correct in green and incorrect in red. You will receive a score based on how many 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.

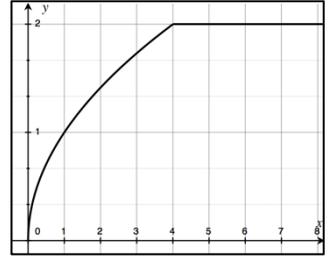


- A. L-T-R B. L-R-T C. R-T-L D. R-L-T
2. (3 pts) The region between the y -axis and the curves $y = 2$ and $y = \sqrt{x}$ is rotated about the x -axis. Find the volume of the solid generated.
- A. 8π B. 4π C. $\frac{64\pi}{3}$ D. $\frac{56\pi}{3}$
3. (5 pts) An oven was turned on and the temperature inside increased at the rate of $r(t) = -8.4t^2 + 46t + 2$, t measured in minutes and r measured in degrees Fahrenheit per minute. If the temperature of the oven was 315°F after 5 minutes, what was the temperature of the oven before it was turned on?
- A. 70° B. 75° C. 80° D. 235°
4. (7 pts) A particle is moving along a straight line. The graph of the acceleration of the particle, $a(t)$, is shown by the figure to the right for $0 \leq t \leq 8$. If $v(0) = -24$ what is the speed of the particle at $t = 8$?



- A. 0 B. 3
C. 21 D. 45

5. (9 pts) The differentiable function $f(x)$ is comprised of two pieces. $f(x) = \sqrt{x}$ for $0 \leq x \leq 4$ and the function is constant for $4 < x \leq 8$, as shown by the figure to the right. For what interval, $0 \leq x \leq 8$, does the function satisfy the mean value theorem for integrals?



- A. (1, 2)
- C. (3, 4)

- B. (2, 3)
- D. (4, 5)