

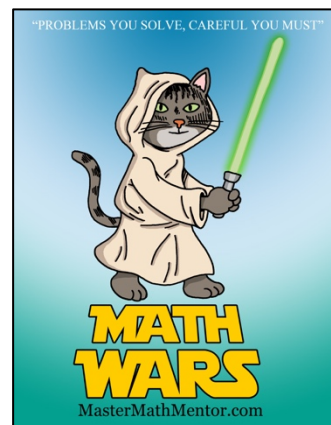
Math Wars – AB Calculus

Scrambled 180 – Integrals and Applications



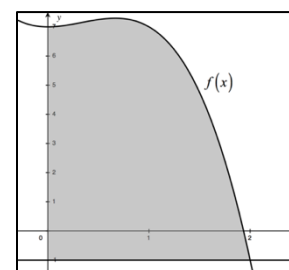
Maximum Time: 7.25 Minutes

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=180>



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 shaded region in the graph in the figure to the right is rotated about the line $y = -1$. Which of the following represents the volume?



- A. $\pi \int_0^2 [f(x) - 1]^2 dx$ B. $\pi \int_0^2 [f(x) + 1]^2 dx$
 C. $\pi \int_0^2 ([f(x)]^2 + 1) dx$ D. $\pi \int_0^2 ([f(x)]^2 - 1) dx$

2. (3 pts) $\int \frac{x^4 + \sqrt[4]{x} + 4}{x^2} dx =$

- A. $\frac{x^3}{4} + \frac{4}{5}x^{1/4} + \frac{4}{x} + C$ B. $\frac{x^3}{3} - \frac{4}{3x^{3/4}} + \frac{4}{x} + C$ C. $\frac{x^3}{3} - \frac{4}{3x^{3/4}} - \frac{4}{x} + C$ D. $\frac{x^3}{3} - \frac{3}{7x^{7/4}} + \frac{4}{x} + C$

3. (5 pts) If $x \geq 3$, find $\int \sqrt{x^4 - 9x^2} dx =$

- A. $\frac{2(x^4 - 9x^3)^{3/2}}{3} + C$ B. $\frac{(x^2 - 9)^{3/2}}{6} + C$ C. $\frac{(x^2 - 9)^{3/2}}{3} + C$ D. cannot be integrated

4. (7 pts) A curve has the property that the slope of the curve at every point P is twice the square of the y -coordinate. The classification of the curve is

- A. quadratic B. logarithmic C. exponential D. reciprocal

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