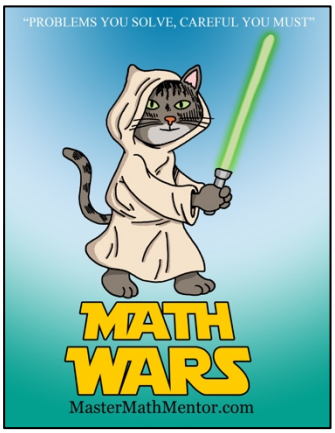
Math Wars – AB Calculus
Scrambled 175 – Integrals and Applications

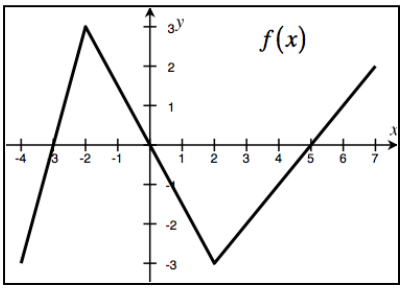


Maximum Time: 8.25 Minutes

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=175

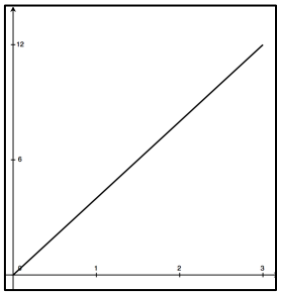
When ready, start the timer and then solve the problems below, entering your choice, A, B, C, D and pressing Submit for each problem when you are sure of your answer. When complete, stop the timer. You will see problems you got correct in green and incorrect in red. You will receive a score based on 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 the piecewise linear function f is shown in the figure to the right. If $g(x)=\int_7^x f(t)\,dt$, what is the value of $g(-3)$?



A. –5 B. –1 C. 1 D. 5

2. (3 pts) When a cruise ship towel folding machine is up to speed, towels are folded at the rate of 12 towels per minute. The rate $F(t)$ that towels are folded in the machine's first 3 minutes of use is given by the graph in the figure to the right. If 500 folded towels are available when the machine starts to work, how many folded towels are available after 3 hours?



A. 2,124 B. 2,142
C. 2,642 D. 2,678

3. (5 pts) $\frac{1}{10}\left(\frac{1}{e^5}+\frac{2}{e^{5.1}}+\frac{2}{e^{5.2}}+\ldots+\frac{2}{e^{9.9}}+\frac{1}{e^{10}}\right)$ 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) If a particle moves along a straight line with velocity $v(t)=2t^2\cos t$, find the average acceleration of the particle from $t=\pi$ to $t=2\pi$.

A. 0 B. 4π C. 6π D. 10π

5. (9 pts) $\int \frac{2x^2}{x+1}dx =$

A. $x^2 - 2x + 2\ln|x+1| + C$

B. $x^2 + 2x + 2\ln|x+1| + 5 + C$

C. $x^2 + \frac{2x^3}{3} + C$

D. $x^2 + 2\ln|x+1| + C$