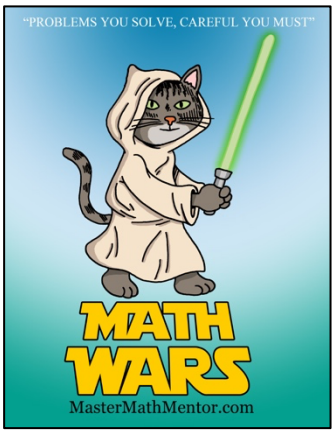
Math Wars – AB Calculus
Scrambled 151 – Limits & Derivatives



Maximum Time: 7.5 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=151

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.

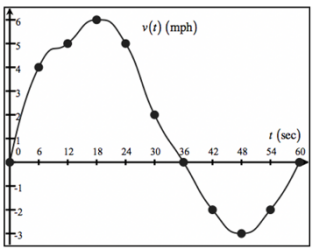
1. (1 pt) If a is a constant, $f(x)=a^2x^2+ax+a$, find $f'(-a)$

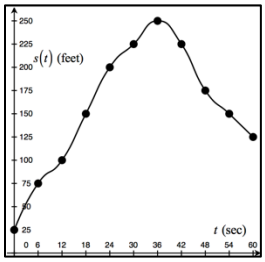
A. $-2a^3$ B. $a-2a^3$
C. $-a-2a^3$ D. a

2. (3 pts) If $f(x)=\dfrac{1}{1+g(x)}$, $f'(x)=$

A. $\dfrac{-1}{[g(x)]^2}$ B. $\dfrac{-1}{[1+g(x)]^2}$ C. $\dfrac{-g'(x)}{[g(x)]^2}$ D. $\dfrac{-g'(x)}{[1+g(x)]^2}$

3. (5 pts) A train is doing some switch operations in a yard. Its velocity in mph over 60 seconds is shown by the first graph while its position in feet relative to a platform is show in the second graph. How far does the train move over the 60 seconds?



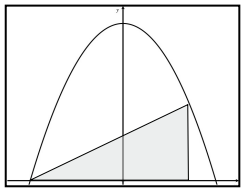


A. 100 feet B. 125 feet
C. 325 feet D. 350 feet

4. (7 pts) Find $\lim\limits_{x\to -1/2}\left(\dfrac{x-4x^3}{x^2-1/4}\right)$

A. –2 B. 2 C. 8 D. does not exist

5. (9 pts) A right triangle is inscribed under the curve $y=9-x^2$ as shown by the figure to the right. What is the largest area triangle that is possible?



A. 4 B. 16
C. 24 D. 32