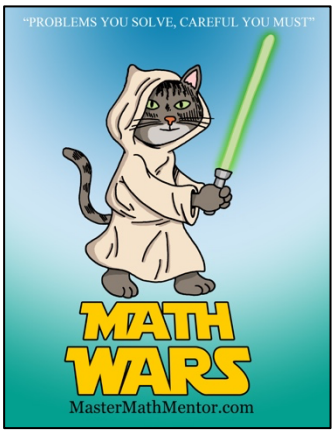
Math Wars – BC Calculus
Scrambled # 256

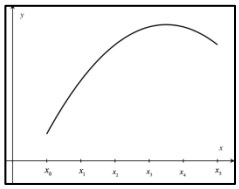


Maximum Time: 7.75 Minutes

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=256

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. $f(x_5)$ is approximated using Euler's method and $f(x_0)$ to start and using 5 equal steps. Determine the nature of this approximation.



A. it overestimates $f(x_5)$
B. it underestimates $f(x_5)$
C. it equals $f(x_5)$
D. it depends on the actual function

2. (3 pts) $\{2,8,18,32,50,\ldots\}$ can be written

A. $\{2^n\}$ B. $\{(2n)^n\}$ C. $\{(2n)^2\}$ D. $\{2n^2\}$

3. (5 pts) $\lim_{x\to 0}\left(\frac{1}{x}-\frac{1}{\cos x-1}\right)$

A. 1 B. –1 C. 0 D. does not exist

4. (7 pts) Suppose k is an integer. If $\sum_{n=1}^{\infty}\left(\frac{k}{10}\right)^n$ and $\sum_{n=1}^{\infty}\left(\frac{1}{n^{k^2/10}}\right)$ both converge, how many values of k are possible?

A. 6 B. 7 C. 12 D. 114

5. (9 pts) For the 47th degree Maclaurin polynomial for $f(x)=\sin x-\sin(-x)$, what is the coefficient for x^{47}?

A. $\frac{2}{47}$ B. $\frac{2}{46!}$ C. $\frac{-2}{46!}$ D. $\frac{-2}{47!}$