

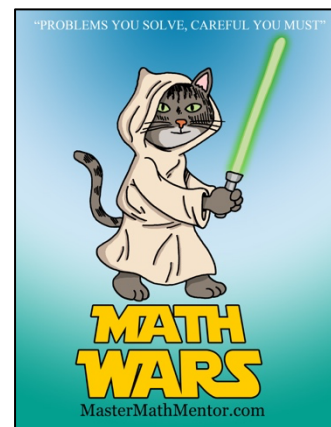
Math Wars – BC Calculus

Scrambled # 266



Maximum Time: 8 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=266>



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) Which of the following are power series?

$$\text{I. } \sum_{n=0}^{\infty} \left(n \sin \frac{3\pi n}{2} \right) (x^n) \qquad \text{II. } \sum_{n=1}^{\infty} (n \sqrt[n]{x})$$

- A. I only B. II only C. I and II only D. Neither

2. (3 pts) Consider the differential equation $\frac{dy}{dx} = -2y^2$ with initial condition $f(1) = -1$. Find the Euler approximation of $f(0)$ using two equal steps.

- A. -2 B. -4 C. -6 D. -8

3. (5 pts) Which of the following series converge?

$$\text{I. } \sum_{n=1}^{\infty} \left[\left(\frac{1}{2} \right)^n + \frac{1}{n^2} \right] \qquad \text{II. } \sum_{n=1}^{\infty} \left[\left(\frac{3}{2} \right)^n + \frac{1}{n^{2/3}} \right]$$

- A. I only B. II only C. I and II only D. Neither

4. (7 pts) Find the values of t for which the graph of the parametric equations $x = 3t^4 - 4t^3 - 12t^2 + 1$ and $y = 2t^3 - 9t^2 + 12t - 2$ has a vertical tangent.

- I. $t = -1$ II. $t = 0$ III. $t = 1$ IV. $t = 2$

- A. I and II only B. I, II and IV only C. III and IV only D. II, III and IV only

5. (9 pts) Find the maximum error in using the 2nd degree Taylor polynomial about $x = 4$ for $f(x) = \sqrt{x}$ to compute $\sqrt{5.5}$.

- A. 0.01171 B. 0.01977 C. 0.00659 D. 0.07655