

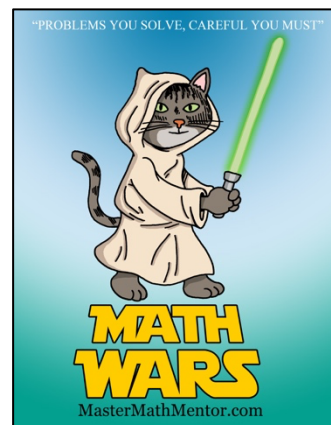
Math Wars – BC Calculus

Scrambled # 264



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=264>



When ready, start the timer and then solve the problems below, entering your choice, A, B, C, D and pressing 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 $f(x) = \sum_{n=0}^{\infty} \left(\frac{2x}{7}\right)^n$, what is the value of $f(2)$?

- A. $\frac{7}{4}$ B. $\frac{7}{3}$ C. 1 D. divergent

2. (3 pts) Let f be a function having derivatives for all orders of real numbers. The 5th degree Taylor polynomial for f about $x = -3$ is given by $P_5(x) = -3 - \frac{2}{3}(x+3)^3 + k(x+3)^5$, where $k \neq 0$. If $f^{(5)}(-3) = 20$, find $P_5(-4)$.

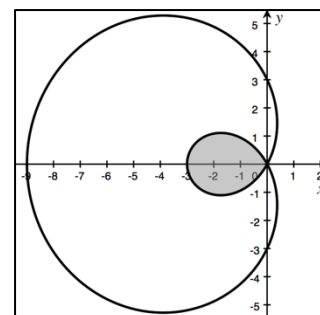
- A. $\frac{13}{6}$ B. $\frac{1}{6}$ C. $\frac{-5}{2}$ D. $\frac{-19}{3}$

3. (5 pts) $\int_0^{\infty} \frac{e^x}{(2+2e^x)^2} dx =$

- A. $\frac{1}{8}$ B. $\frac{1}{4}$ C. $\frac{1}{2}$ D. divergent

4. (7 pts) The graph of the limaçon $r = 3 - 6\cos\theta$ is shown in the figure to the right. Which of the following gives the area of the shaded inner loop?

- A. $\frac{1}{2} \int_0^{\pi/3} (3 - 6\cos\theta)^2 d\theta$ B. $\int_0^{\pi/3} (3 - 6\cos\theta)^2 d\theta$
 C. $\frac{1}{2} \int_{\pi/3}^{5\pi/3} (3 - 6\cos\theta)^2 d\theta$ D. $\int_{\pi/3}^{5\pi/3} (3 - 6\cos\theta)^2 d\theta$



5. (9 pts) Using the ratio test on $\sum_{n=0}^{\infty} \frac{5^{\frac{1}{2}n+1} n^2}{4^{n+1} (n+1)}$, the result is _____ telling us the series is _____

A. $\frac{\sqrt{5}}{4}$, Convergent

B. $\frac{5}{2}$, Divergent

C. $\frac{5}{4}$, Divergent

D. 1, inconclusive