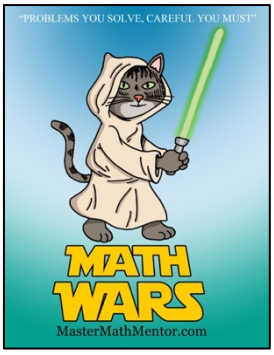
Math Wars – AB Calculus
Topic 108 – Transcendental Derivatives



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=108

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 $f(x)=\dfrac{x}{\ln x}$, for what value of x does f have a horizontal tangent?

A. 0 B. 1 C. e D. no value

2. (3 pts) Find the slope of the tangent line to $e^{xy}+2x-5y=9$ at (4, 0).

A. $\dfrac{-1}{2}$ B. 2 C. $\dfrac{2}{5}$ D. undefined

3. (5 pts) Within the domain of the functions below, how many of the following have a different derivative than that of $y=\ln x$?

I. $y=\ln(4x)$ II. $y=-\ln\left(\dfrac{1}{x}\right)$ III. $y=2\ln\left(\sqrt{x}\right)$

A. 0 B. 1 C. 2 D. 3

4. (7 pts) The 11th derivative of $f(x)=xe^{-x}$ is

A. $(x-10)e^{-x}$ B. $(10-x)e^{-x}$ C. $(x-11)e^{-x}$ D. $(11-x)e^{-x}$

5. (9 pts) Find the equation to the tangent line to $y=\ln\left(\dfrac{2e^{2x}-1}{3e^{3x}-2}\right)$ at $x=0$

A. $y=5-5x$ B. $y=-5x$ C. $y=1-x$ D. $y=-x$