

DIGITLE – AB CALCULUS

Puzzle 108 – Differentiation of Transcendentals

Directions: The first 5 problems have single digit answers. The 6th problem has a 5-digit answer (counting leading zeros if present). You have a choice: solve the easier single-digit answer problems or tackle the more difficult 5-digit answer. Once you have done that, attempt to solve the puzzle by entering the following url on your computer, tablet, or phone:

<https://mastermathmentor.com/mmm/digitle.ashx>.

The correct puzzle answer will be the digits of your answer(s) scrambled. Use the following interpretation. You get 6 tries.



Green : the digit is in the answer and is in the correct spot.

Yellow: the digit is in the answer but is not in the correct spot.

Grey : the digit is not in the answer.

Single Digit Answers:

1) If $f(x) = \ln(\sin 3x)^3$, find $f'\left(\frac{3\pi}{4}\right)$.

2. If $f(x) = \ln(2xe^{-x} + e^{-x})$, find $f'(x)$.

3) Find the y -intercept to the tangent line to $\ln(xy) = 1$ at the point $(e, 1)$.

4) Let $g(x) = e^{f(2x)}$. If $f(2) = 3$ and $g'(1) = 6e^3$, find $f'(2)$.

5) If $f(x) = \frac{e^{\sin(14x)}}{\sin(e^{14x})}$, find $f'(0)$. Round to the nearest integer.

5-Digit Answer:

6) If $y = 1000e^{\sin \pi x + \cos \pi x}$, find $y'(0) + y'(1) + y'(2) + y'(3) + y'(4) + y'(5) + y'(6) + y'(7)$.