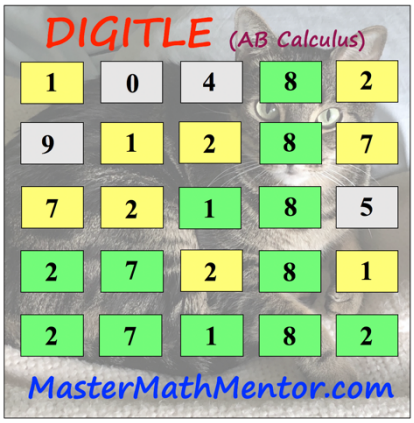
DIGITLE – AB CALCULUS
Puzzle 124 – Definite Integration w/Transcendentals



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) Find the value of $8\int_0^{\sqrt{5\pi/3}} x\sin\left(x^2\right)dx$

2) $\int_0^{\pi/3} \frac{\sin x}{\cos^2 x}dx =$

3) Find $6\int_0^{\ln 6} e^{-x}\,dx$

4) (Calculator) Let $F(x)$ be an antiderivative of $\sqrt[3]{\sin x+\cos x+2}$. If $F(1)=3.434$, then the value of $F(4)$ rounded to the nearest integer is

5) $\int_{e^e}^{e^{e^2}} \frac{1}{t\ln t}\,dt =$

5-Digit Answer:

6) Using u-substitution, $\int_1^{e^3} \frac{\sqrt{4\ln x+5}}{3x}\,dx$ is equivalent to $\frac{\int_a^b \sqrt{u}\,du}{c}$. The answer to this problem are the digits of a, b, and c. For instance, if you thought the answer was $\frac{1}{5}\int_6^{12}\sqrt{u}\,du$, your solution would be 61205.