

DIGITLE – AB CALCULUS

Puzzle 123 – Fundamental Theorem

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.



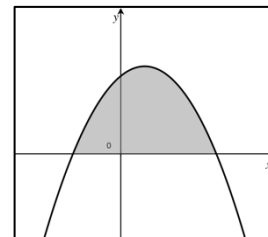
Green : the digit is in the answer and is in the correct spot.
Yellow: the digit is in the answer but is not in the correct spot.

Grey : the digit is not in the answer.

Single Digit Answers:

1) Find the value of $\int_{-1}^1 (12x^2 - 6x) dx$

2) The graph of $y = \frac{4}{3} + \frac{x}{3} - \frac{x^2}{6}$ is shown in the figure to the right. Find the area of the shaded region.



3) $\int_4^9 \frac{3x-9}{4\sqrt{x}} dx =$

4) $\int_0^2 2|1-x^3| dx =$

5) If $\int_0^{16} f(x) dx = 1$, find $2 \int_0^4 xf(x^2) dx$

5-Digit Answer:

6) Find the value of $\int_3^{399} \frac{3x}{\sqrt{x+1}} dx$