

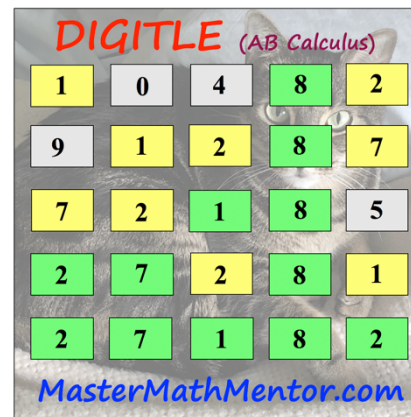
DIGITLE – AB CALCULUS

Puzzle 120 – Definite Integral and Area

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.



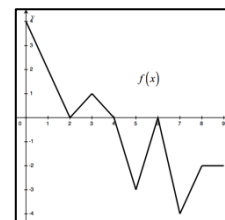
Green : the digit is in the answer and is in the correct spot.
Yellow: the digit is in the answer but is not in the correct spot.

Grey : the digit is not in the answer.

Single Digit Answers:

1) Find $\int_{-3}^2 (2x + 2) dx$

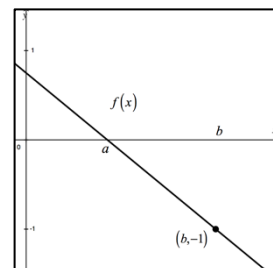
2) The graph of $f(x)$ is to the right. If $F(x) = \int_0^x f(t) dt$, find the largest value of x where $F(x) = 0$.



3) $\int_{-4}^9 f(x) dx = 5$, $\int_9^4 f(x) dx = -2$, find $\int_{-4}^4 f(x) dx$.

4) The graph of $f(x)$ (not to scale) is a straight line as shown in the figure to the right.

If $\int_a^b f(x) dx = -3$, find $\int_{b+1}^{a-1} f(x) dx$.



5) If $\int_0^4 f(x) dx = 8$, find $\int_0^4 (f(x) - 2) dx$

5-Digit Answer:

6) The graph of $f(x)$ is shown in the figure to the right as well as areas between $f(x)$ and the x -axis. Find the value of

$$\int_{-10}^{40} f(x) dx + \left| \int_{-10}^{40} f(x) dx \right| + \int_{-10}^{40} |f(x)| dx + \int_{-10}^{40} f|x| dx .$$

