DIGITLE – AB CALCULUS
Puzzle 104 – Differentiation Techniques

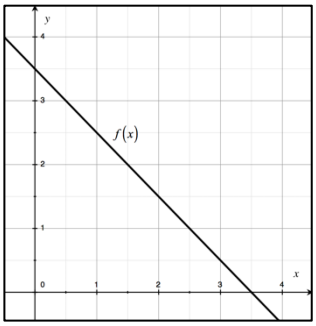
Directions: The first 5 problems have single digit answers. The 6th problem has a 5-digit answer (counting leading zeros if present). You have a choice: solve the easier single-digit answer problems or tackle the more difficult 5-digit answer. Once you have done that, attempt to solve the puzzle by entering 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 $f(x)=\dfrac{-7}{(6-4x)^2}$, find $f'(2)$.

2) The graph of $f(x)$ is shown to the right. If $g(x)=x^2 f(x)$, find $g'(2)$.



3) Let $f(x)=\dfrac{1}{x^3}$. If $f(a)=f'(a)$, find $-a$.

4) If $f(x)=\dfrac{-10(x^2+3x+2)}{x-1}$, find $f'(-1)$

5) If $f(x)=12\sqrt{x}+\dfrac{4}{\sqrt{x}}$, for what value of k does $f''(k)=0$?

5-Digit Answer:

6) Below is a table gving the values of f and g and their derivatives at $x = 7$. If $h(x)=x^3 f(x)g(x)$, find $h'(7)$.

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
7	9	3	12	−1